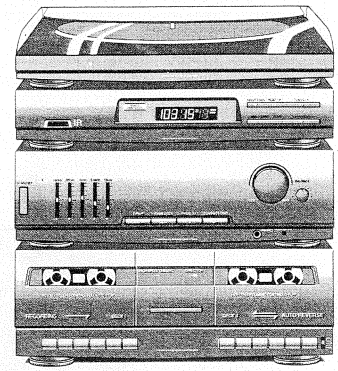
Midi System AS9513
/13/21/37/57/70/90

Service
Service
Service



Service Manual

For repair information of the cassette mechanism
see Service Manual of Tape Transport RN/RR General
documentation and Tape Transport RN-4 or RR-3

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Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

PHILIPS

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

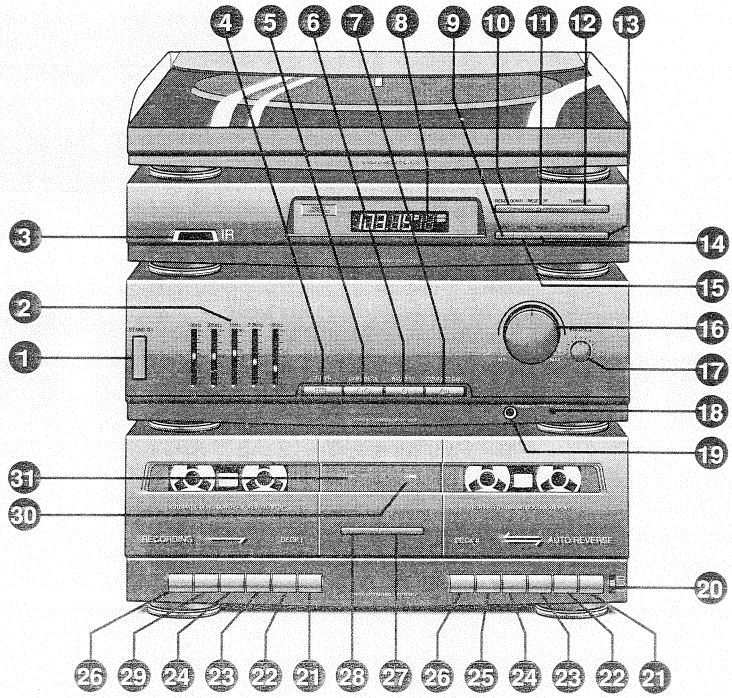
Subject to modification

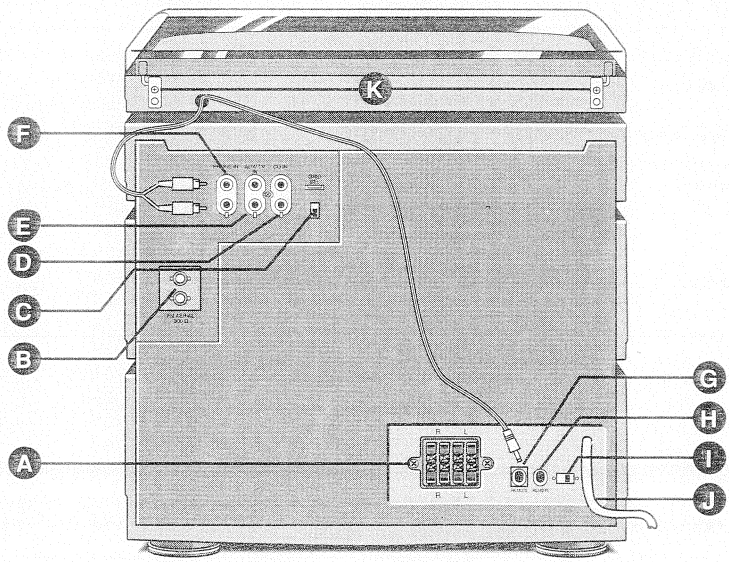
4822 725 23073

Printed in The Netherlands

PHILIPS

CONNECTIONS AND CONTROLS





1	Power Switch	1259	21	Pause	
2	Graphic Equalizer	3505,3507	22	F.Forward	
		3509,3511	23	F.Rewind	
		3513	24	Play	
3	Infra Red Sensor	6420	25	Direction II	
4	Tuner	1404	26	Stop-Eject	
5	Tape	1402	27	Fe/Cr	1801
6	Phone/TV	1401	28	Dolby NR	1802
7	CD	1403	29	Record I	
8	Display	1400	30	Reverse Direction Indicator	6801
9	Band Selector	1406	31	Dolby NR Indicator	6802
10	Preset Down	1412	A	Speaker Connection	1254
11	Preset Up	1411	B @	FM Aerial Socket	1100
12	Tuning Up	1410	*	FM Aerial Socket	1104
13	Tuning Down	1407	C #	Grid Selector	1105
14	Mono/Stereo	1408	D	CD Input	1554
15	Program Memo	1409	E	Aux/TV	1554
16	Volume Control	3500	F	Phono Input	1554
17	Balance	3545	G	DC Socket	1261
18	DBB Switch	1405	H	Remote Out Socket	1255
19	Headphone	1256	I ♣	Voltage Selector	1262
20	Auto Reverse Mode		J	AC Mains Cord	

@ Not for -/37/57 only
* For -/37/57 only
♣ For -/13/21 only
For -/21 only

ADJUSTMENT	CASSETTE	SK...	Recorder position DECK I	Recorder position DECK II	MEASURE ON	READ ON	ADJUST WITH	ADJUST TO
Azimuth	10KHz SBC 420*	Tape	Play	-	1256	mV-meter	Left hand Screw Play head	Max. L = R
		Tape	-	Play fwd	1256	mV-meter	Left hand Screw R/P Head	
		Tape	-	Play rev	1256	mV-meter	Right hand Screw R/P Head	
Motor speed (Normal)	3150Hz SBC420*	Tape	Play	-	1256	Wow and Flutter meter	3774	** a
		Tape	-	Play	1256	Wow and Flutter meter	3776	

* SBC 420 : 4822 397 30071
** a The maximum permissible speed deviation is 2%.
Moreover, the wow and flutter value can be read.
This value should not exceed 0.35%.

SPECIFICATIONS

GENERAL

Mains voltage		: 115V - 220V for -/13/21 only
Mains selection/setting		: Serviceable Set at 120V for -/37/57 only Set at 240V for -/70/90 only
		: Switchable Set at 220V for -/13/21 only
Mains frequency		: 50Hz - 60Hz
Power consumption		: 120W max.
Dimension centre unit		: 360 x 382 x 315 mm

TUNER : FM SECTION

Tuning range		: 87.5MHz - 108MHz
IF frequency		: 10.7MHz
Aerial input		: 75Ω coaxial 300Ω screw type for -/37/57 only
Sensitivity at 26dB S/N		: <5µV <10µV for -/37/57 only
Selectivity at 600kHz bandwidth		: >30dB
IF rejection		: >60dB
Image rejection		: >25dB

TUNER : AM SECTION

Tuning range	MW	: 522kHz - 1611kHz
	MW	: 530kHz - 1700kHz for -/37/57 only
IF frequency		: 450kHz
Grid selector		: 9kHz - 10kHz for -/21 only
Sensitivity at 26dB S/N		: <3.0mV/M
Selectivity at 18kHz bandwidth		: >20dB
IF rejection		: >26dB
Image rejection		: >28dB

AMPLIFIER

Output power at 10% distortion		: 2 x 15W -1dB
Speaker impedance		: 2 x 8Ω
		: 2 x 8Ω surround sound
Frequency response within -3dB		: 60Hz - 14kHz
Equalizer control		: -7dB to +7dB
Dynamic bass boost		: +8dB at 100Hz
Headphone output at 8Ω		: 350mV
Phono supply output		: 12Vdc at 100mA
Remote control output		: 5V non-inverted RC5
Input sensitivity	Aux/TV	: 200mV at 47kΩ
	CD	: 400mV at 47kΩ
	Phono	: 2.7mV at 470kΩ

CASSETTE RECORDER

Number of track		: 2 x 2 stereo
Tape speed		: 4.76 cm/sec ± 2% 1.8 x 4.76 cm/sec
Wow and flutter		: <0.4%
Fast-wind time C60		: 130 sec
Bias system		: 74kHz ± 6kHz
Recording playback frequency response within -7dB		: 125Hz - 12.5kHz
Noise Reduction Factor		: 8.5dB

SELF- TEST PROCEDURE

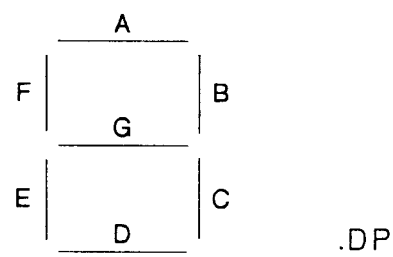
When holding the program-key and preset-up down during power up the ERROM is loaded after which the display lights completely until both keys are released.

The loaded information are as follows:

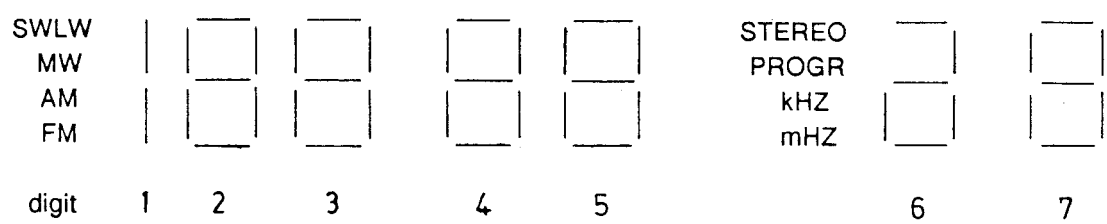
Preset	Frequency			Band
		POL	USA	
0	87.50	65.00	87.5	
1	97.00	65.00	106.5	
2	98.00	65.00	87.5	FM
3	99.00	65.00	87.5	
4	108.00	65.00	87.5	
			USA	
5	522		530	
6	567		580	
7	603		620	MW
8	1278		1370	
9	1494		1610	
10	1611			
11	148			
12	155			
13	200			LW
14	275			
15	284			
		EUR		
16	3820	5820		
17	3900	5900		SW
18	11900	13900		
19	12100	14100		

LCD Display / uProcessor interconnection

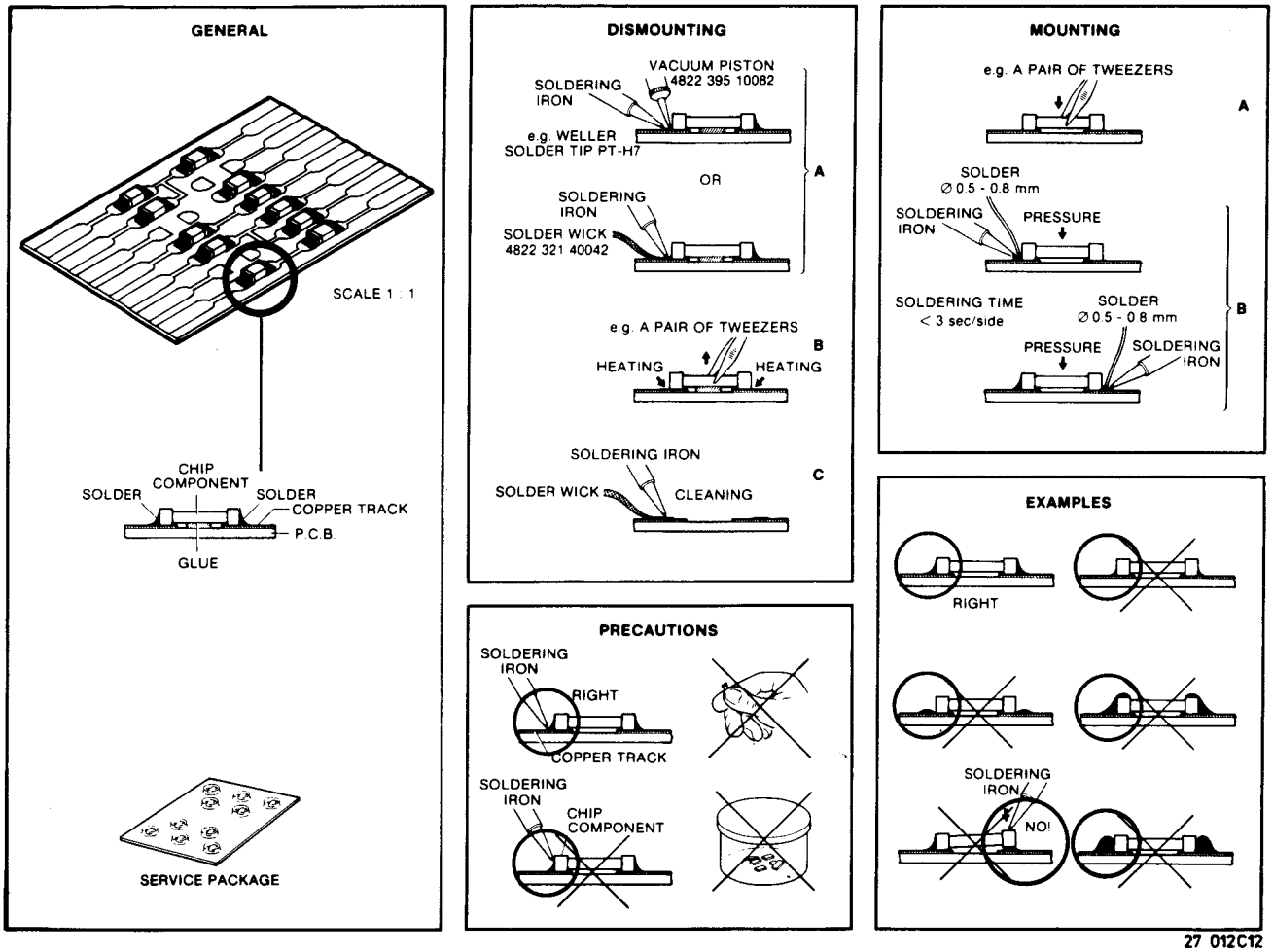
COM2	COM1	LCD Pin	uProc Pin
7C	7D	26	43
7G	7E	25	44
7B	7F	24	45
6B	7A	23	46
5C	5D	22	47
5G	5E	21	48
5B	5F	20	49
KHZ	5A	19	50
4C	4D	18	51
4G	4E	17	52
4B	4F	16	53
LW	4A	15	54
3C	3D	14	55
3G	3E	13	56
3B	3F	12	57
SW	3A	11	59
2C	2D	10	60
2G	2E	9	61
2B	2F	8	62
1BC	2A	7	63
MW	MHZ,FM,DP	6	64
PROGR	AM	5	1
STEREO	6ADG	4	2
6E	6C	3	3
COM2	-	2	5
-	COM1	1	4



LCD Display



HANDLING CHIP COMPONENTS



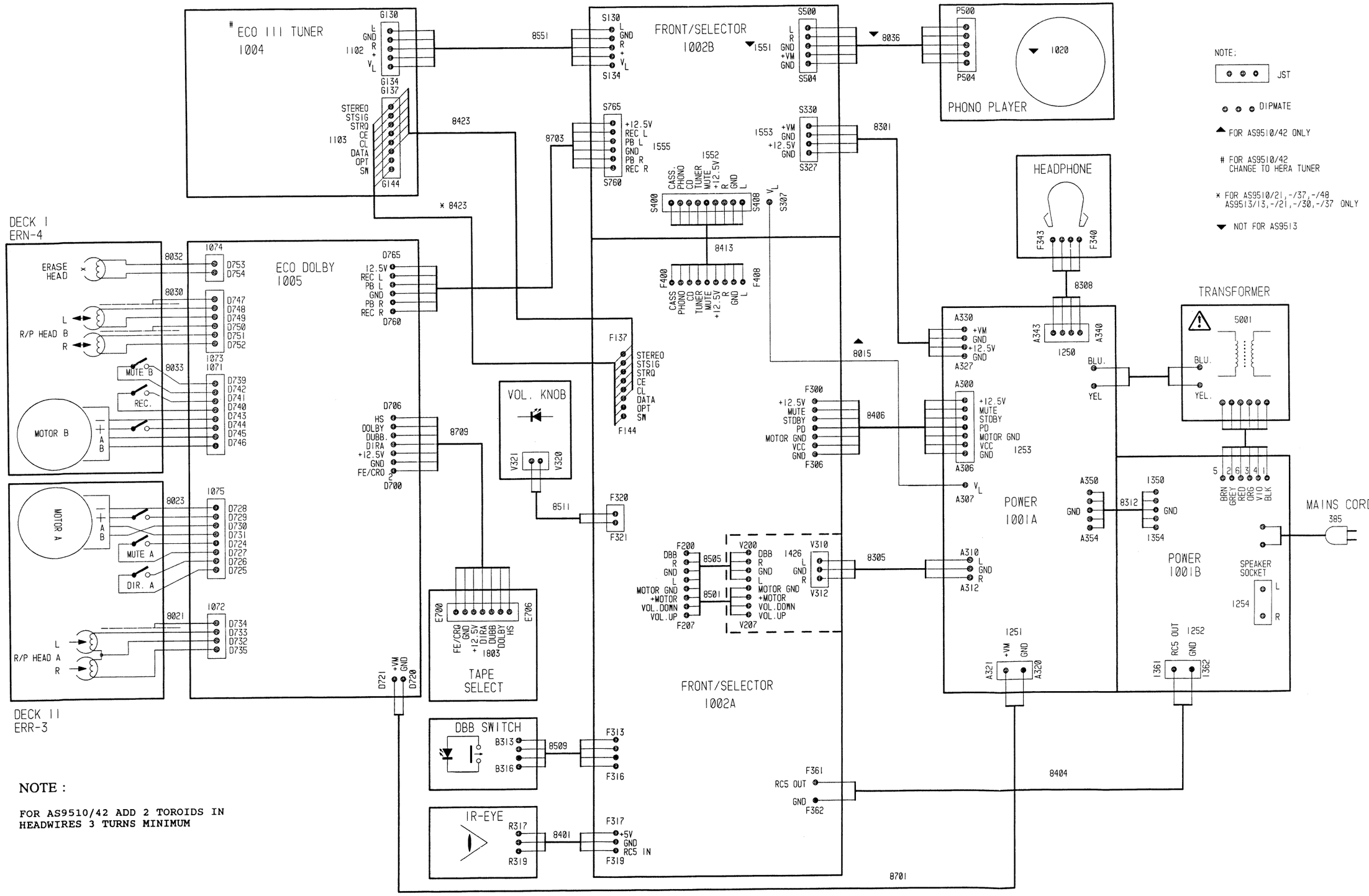
27 012C12

	Carbon film 0.2 W CR16	70°C	5%
	Carbon film 0.33 W CR25	70°C	5%
	Carbon film 0.5 W CR37	70°C	5%
	Standard film 0.5 W SFR16T	70°C	5%
	Standard film 0.4 W SFR25	70°C	5%
	Metal film 0.6 W MRS25	70°C	5%
	Safety resistor		
(C)	Chip component		

	Plate ceramic Tuning < 120 pF	2%
	Others	—20/+80%
	Tubular ceramic	
	Polystyrene film / foil	1%
	Polyestor Film / foil	10%
	Mylar	10%
	Electrolytic	

*a	= 2,5 V
b	= 4 V
c	= 6,3 V
d	= 10 V
e	= 16 V
f	= 25 V
g	= 40 V
h	= 63 V
j	= 100 V
l	= 125 V
m	= 150 V
n	= 160 V
q	= 200 V
r	= 250 V
s	= 300 V
t	= 350 V
u	= 400 V
v	= 500 V
w	= 630 V
x	= 1000 V
A	= 1,6 V
B	= 6 V
C	= 12 V
D	= 15 V
E	= 20 V
F	= 35 V
G	= 50 V
H	= 75 V
I	= 80 V

26338



NOTE :

FOR AS9510/42 ADD 2 TOROIDS IN HEADWIRES 3 TURNS MINIMUM

NOTE:

JST

DIPMATE

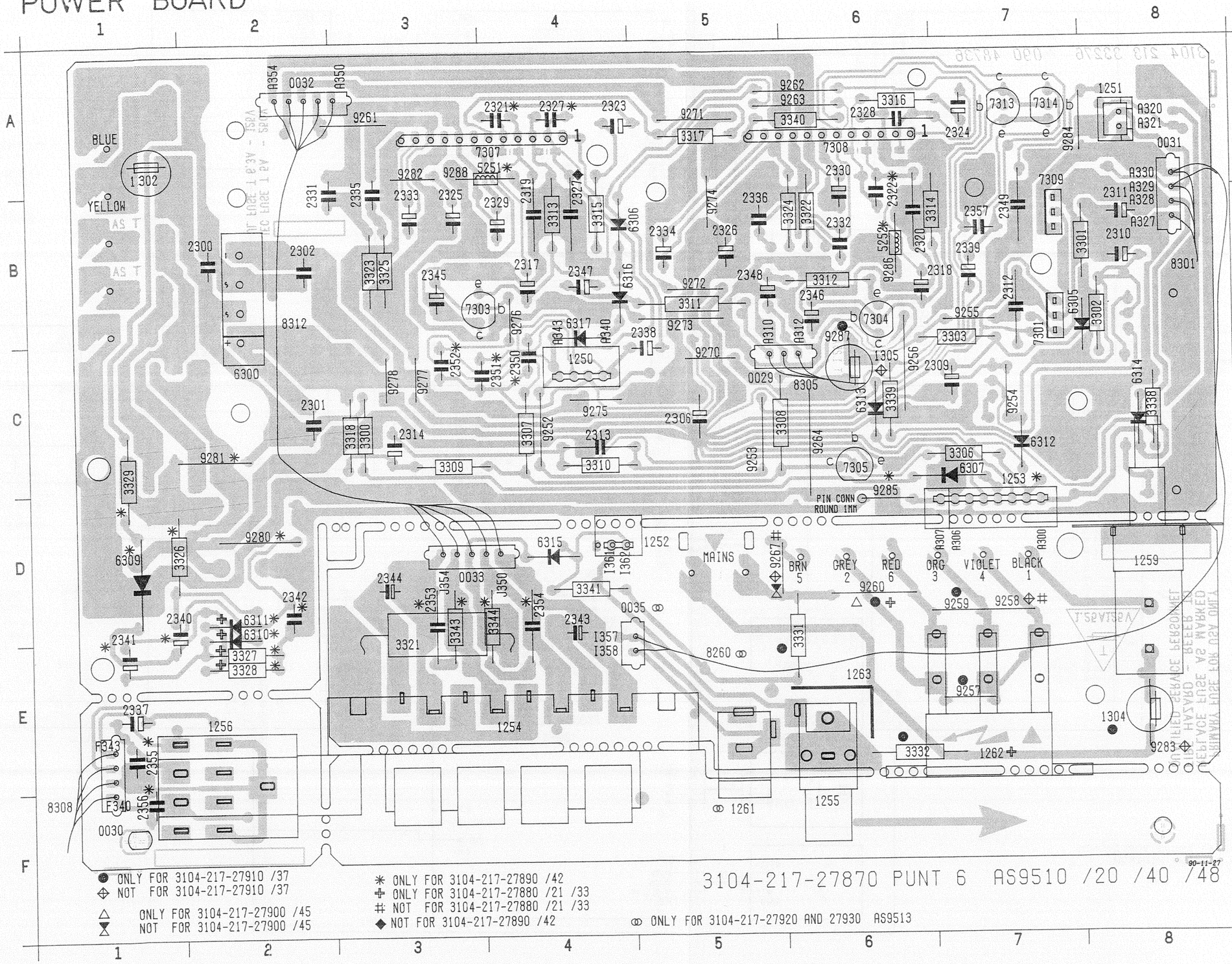
▲ FOR AS9510/42 ONLY

FOR AS9510/42 CHANGE TO HERA TUNER

* FOR AS9510/21,-/37,-/48 AS9513/13,-/21,-/30,-/37 ONLY

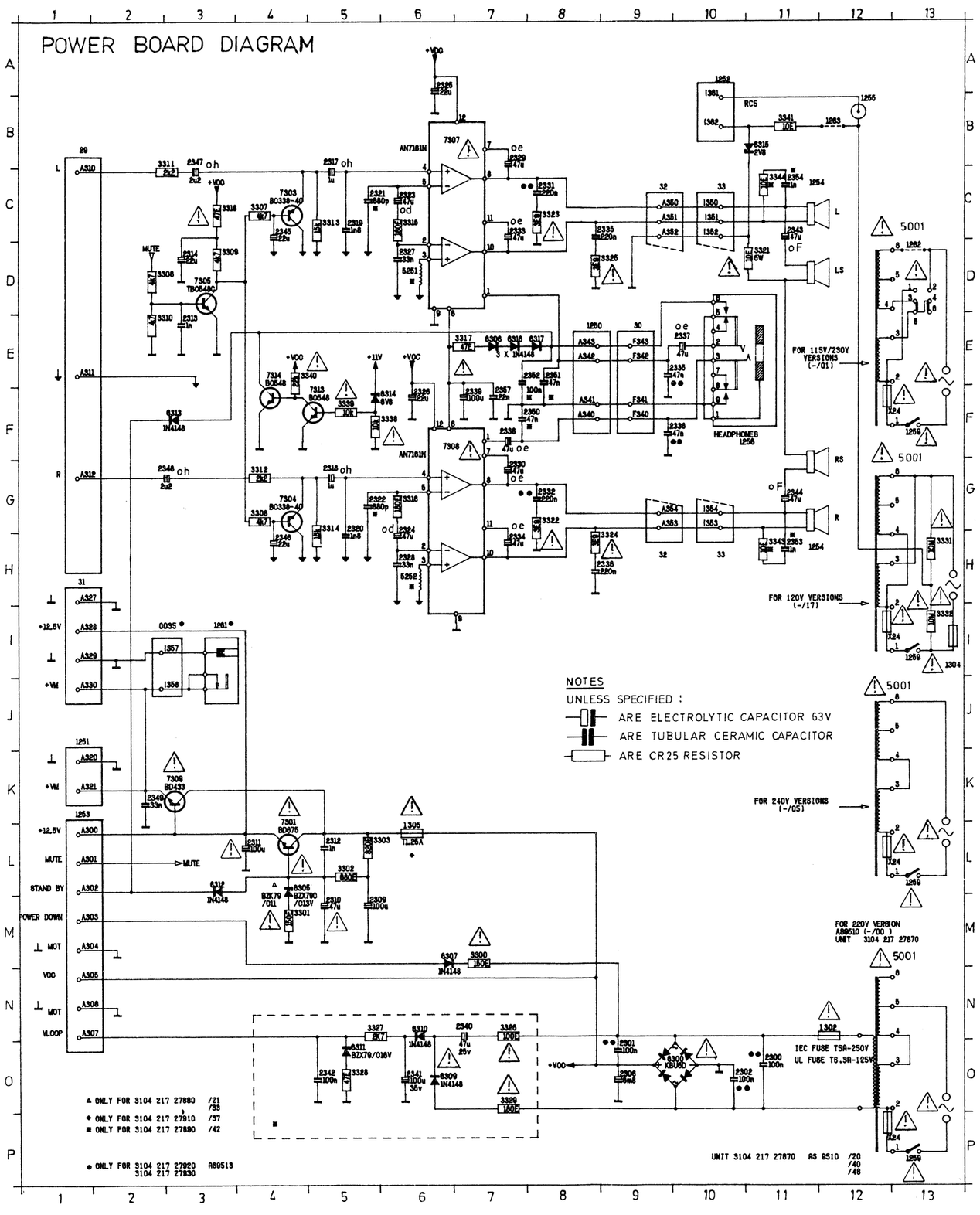
▼ NOT FOR AS9513

POWER BOARD



0029	C 5	2350	C 4	7313	A 7
0030	F 1	2351	C 4	7314	A 7
0031	A 8	2352	C 3	9252	C 4
0032	A 2	2353	D 3	9253	C 5
0033	D 3	2354	D 4	9254	C 7
0035	D 4	2355	E 1	9255	B 7
1250	C 4	2356	F 1	9256	C 6
1251	A 8	2357	B 7	9257	E 7
1252	D 5	3300	C 3	9258	D 7
1253	C 7	3301	B 8	9259	D 7
1254	E 4	3302	B 8	9260	D 6
1255	F 6	3303	C 7	9261	A 3
1256	E 2	3306	C 7	9262	A 6
1259	D 8	3307	C 4	9263	A 6
1261	F 5	3308	C 6	9264	C 6
1262	E 7	3309	C 3	9267	D 5
1263	E 6	3310	C 4	9270	C 5
1302	A 1	3311	B 5	9271	A 5
1304	E 8	3312	B 6	9272	B 5
1305	C 6	3313	B 4	9273	B 5
2300	B 2	3314	B 7	9274	B 5
2301	C 2	3315	B 4	9275	C 4
2302	B 2	3316	A 6	9276	B 4
2306	C 5	3317	A 5	9277	C 3
2309	C 7	3318	C 3	9278	C 3
2310	B 8	3321	E 3	9280	D 2
2311	B 8	3322	B 6	9281	C 2
2312	B 7	3323	B 3	9282	A 3
2313	C 4	3324	B 6	9283	E 8
2314	C 3	3325	B 3	9284	A 7
2317	B 4	3326	D 1	9285	D 6
2318	B 7	3327	E 2	9286	B 6
2319	A 4	3328	E 2	9287	C 6
2320	B 6	3329	C 1	9288	A 3
2321	A 4	3331	D 6		
2322	B 6	3332	E 6		
2323	A 4	3338	C 8		
2324	A 7	3339	C 6		
2325	B 3	3340	A 6		
2326	B 5	3341	D 4		
2327	A 4	3343	D 3		
2327	B 4	3344	D 4		
2328	A 6	5251	A 4		
2329	B 4	5252	B 6		
2330	A 6	6300	C 2		
2331	A 2	6305	B 7		
2332	B 6	6306	B 5		
2333	B 3	6307	C 7		
2334	B 5	6309	D 1		
2335	A 3	6310	D 2		
2336	B 5	6311	D 2		
2337	E 1	6312	C 7		
2338	B 5	6313	C 6		
2339	B 7	6314	C 8		
2340	D 1	6315	D 4		
2341	D 1	6316	B 4		
2342	D 2	6317	B 4		
2343	D 4	7301	B 7		
2344	D 3	7303	B 3		
2345	B 3	7304	B 6		
2346	B 6	7305	C 6		
2347	B 4	7307	A 4		
2348	B 5	7308	A 6		
2349	B 7	7309	A 7		

0030	E9	2352	E7
0031	M1	2353	H11
0032	C9	2354	C11
0032	M9	2357	F7
0033	C10	3300	M7
0033	H10	3301	M46
1250	E8	3302	L5
1251	J1	3303	L5
1252	A10	3306	D2
1253	K1	3307	C4
1254	M11	3308	G4
1254	C11	3309	D3
1255	B12	3310	E2
1256	F11	3311	B3
1261	I3	3312	G4
1262	D13	3313	C5
1263	B12	3314	G5
1302	M12	3315	C6
1304	I13	3316	G6
1305	L6	3317	E7
2300	O11	3318	C3
2301	O9	3321	D11
2302	O10	3322	G8
2306	O9	3323	C8
2309	M5	3324	M8
2310	M5	3325	D8
2311	L4	3326	M7
2312	L5	3327	M5
2313	E3	3328	O5
2314	D3	3329	O7
2317	B5	3331	H13
2318	G5	3332	I13
2319	C5	3338	F5
2320	G5	3339	F5
2321	C5	3340	E4
2322	G5	3341	B11
2323	C6	3343	H11
2324	G6	3344	C11
2325	A6	5001	J12
2326	F6	5001	G12
2327	D6	5001	D12
2328	H6	5001	M12
2329	B7	5251	D6
2330	G7	5252	H6
2331	C8	6300	O10
2332	G8	6305	L4
2333	C7	6306	E7
2334	H7	6307	M6
2335	E9	6309	O6
2335	C8	6310	M6
2336	H8	6311	O5
2336	F9	6312	L3
2337	E10	6313	F3
2338	F7	6314	F5
2339	F7	6315	B11
2340	M7	6316	E7
2341	O6	6317	E8
2342	O5	7301	K4
2343	C11	7303	C4
2344	G11	7304	G4
2345	C4	7305	D3
2346	H4	7307	B6
2347	B3	7308	F6
2348	G3	7309	K3
2349	K2	7313	F5
2350	F7	7314	E4
2351	E8		


POWER BOARD DIAGRAM
NOTES
UNLESS SPECIFIED :
ARE ELECTROLYTIC CAPACITOR 63V
ARE TUBULAR CERAMIC CAPACITOR
ARE CR25 RESISTOR
FOR 115V/230V VERSIONS (-/01)
FOR 120V VERSIONS (-/17)
FOR 240V VERSIONS (-/05)
FOR 220V VERSION AS9610 (-/00) UNIT 3104 217 27870
HEADPHONES 1256
IEC FUSE T5A-250V
UL FUSE T6.3A-125V
UNIT 3104 217 27870 AS 9510 /20 /40 /48
△ ONLY FOR 3104 217 27880 /21 /33
◆ ONLY FOR 3104 217 27910 /37
■ ONLY FOR 3104 217 27890 /42
● ONLY FOR 3104 217 27920 AS9513
3104 217 27930

FOR POWER BOARD

+Vcc : 22.4V

7307/7308

1 : 4.0V
2 : 1.2V
3 : 0V
4 : 0.1V
5 : 1.2V
6 : 22.4V
7 : 21.5V
8 : 12.2V
9 : 0V
10 : 12.2V
11 : 22.0V
12 : 22.4V

7301	7303/7304	7309
e : 13.1V	e : 0V	e : 12.7V
b : 14.6V	b : 0V	b : 13.1V
c : 22.4V	c : 0V	c : 22.4V

7313	7314
e : 0V	e : 21.4V
b : 0.7V	b : 0V
c : 0V	c : 0V

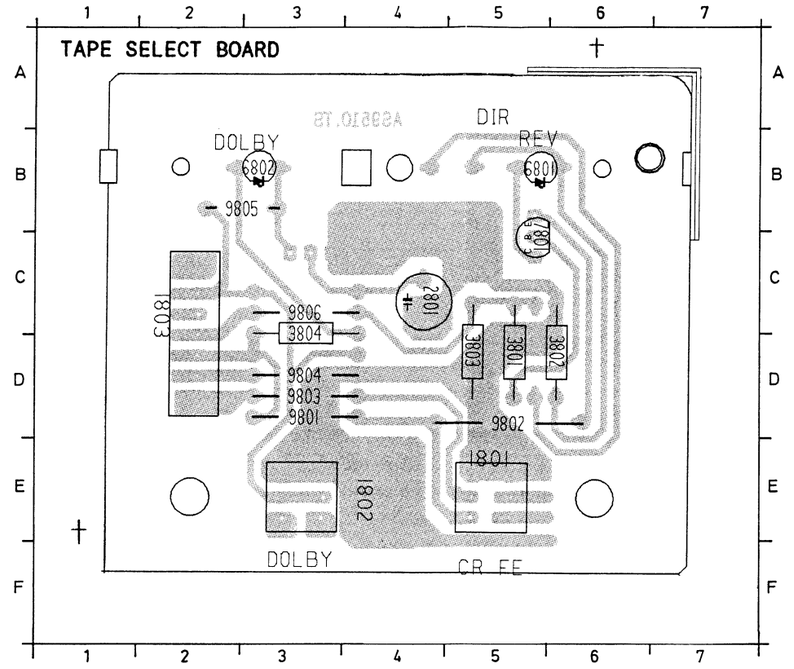
....V measured in power on position

FOR TAPE SELECT BOARD

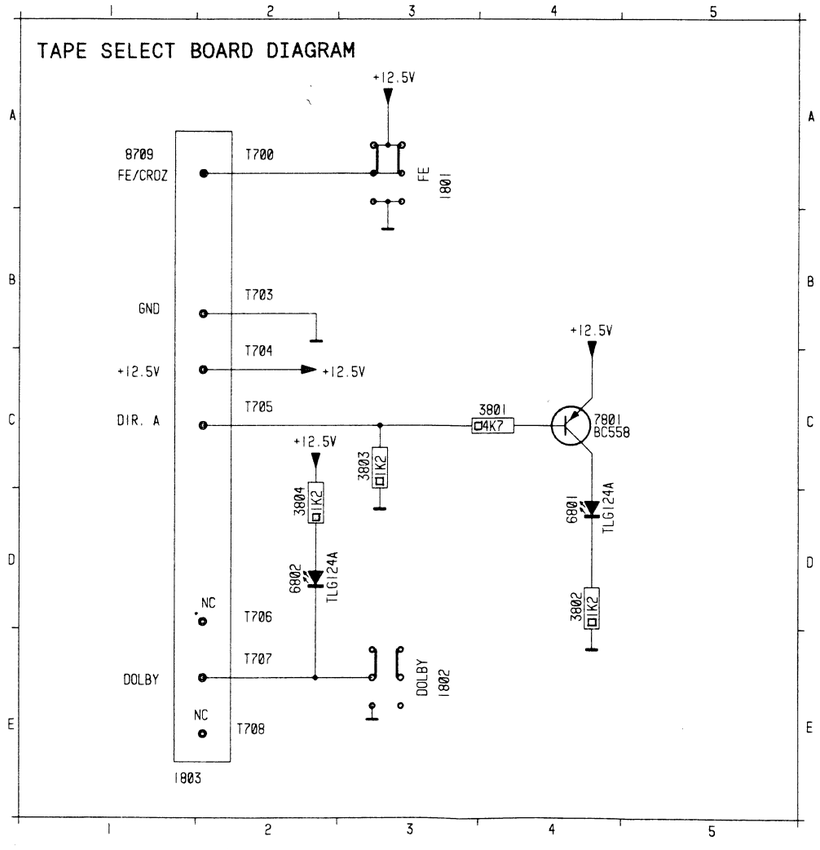
7801

e : 12.5V
b : 12.5Vfw
11.7Vrew
c : 0Vfw
12.5Vrw

....V measured in power on position
....Vfw measured in tape forward positon
....Vrew measured in tape rewind position

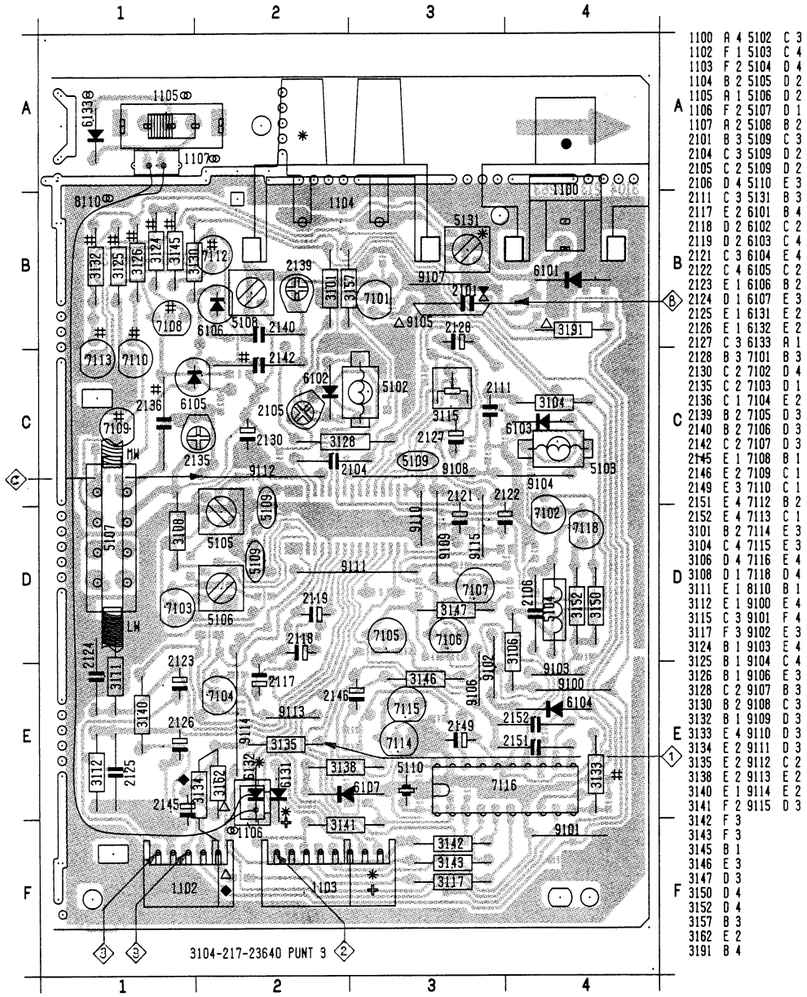


80	A1
1801	E5
1802	E4
1803	C2
3801	D5
3802	C6
3803	D5
3804	C3
6801	B5
6802	B3
7801	C5
9801	D3
9802	D5
9803	D3
9804	D3
9805	B2
9806	C3



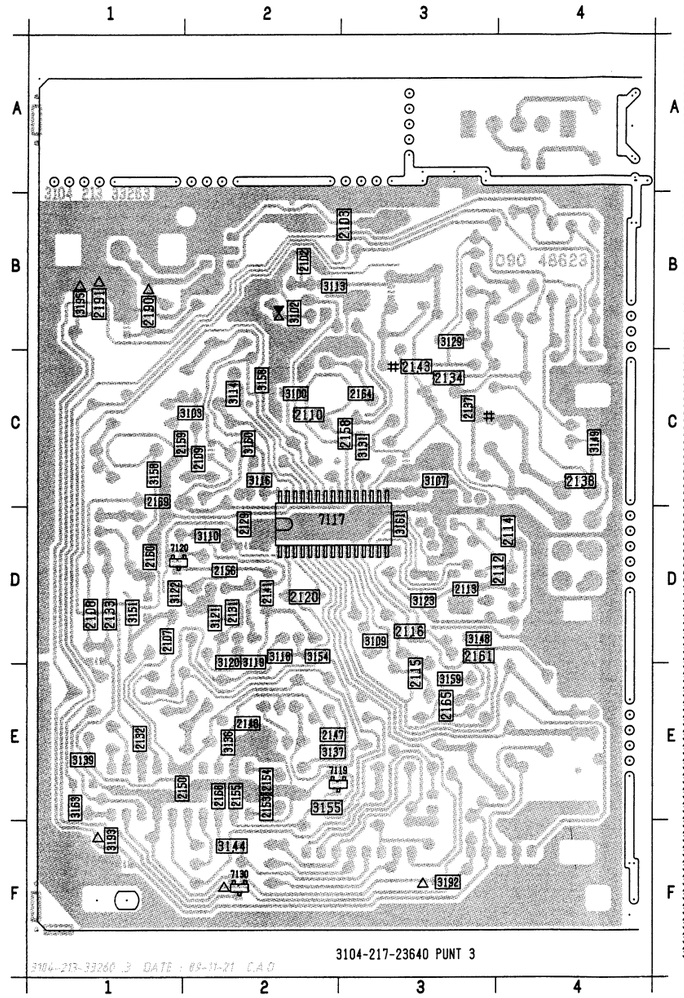
1801	A3
1802	E3
1803	C1
3801	C4
3802	D4
3803	C3
3804	D2
6801	D4
6802	D2
7801	C4
8709	A1

TUNER BOARD



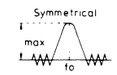
1100 A 4 5102 C 3
1102 F 1 5103 C 4
1103 F 2 5104 D 4
1104 B 2 5105 D 2
1105 A 1 5106 D 2
1106 F 2 5107 D 1
1107 A 2 5108 B 2
2101 B 3 5109 C 3
2104 C 3 5109 D 2
2105 C 2 5109 D 2
2106 D 4 5110 E 3
2111 C 3 5131 B 3
2117 E 2 6101 B 4
2118 D 2 6102 C 2
2119 D 2 6103 C 4
2121 C 3 6104 E 4
2122 C 4 6105 C 2
2123 E 1 6106 B 2
2124 D 1 6107 E 3
2125 E 1 6131 E 2
2126 E 1 6132 E 2
2127 C 3 6133 A 1
2128 B 3 7101 B 3
2130 C 2 7102 D 4
2135 C 2 7103 D 1
2136 C 1 7104 E 2
2139 B 2 7105 D 3
2140 B 2 7106 D 3
2142 C 2 7107 D 3
2145 E 1 7108 B 1
2146 E 2 7109 C 1
2149 E 3 7110 C 1
2151 E 4 7112 B 2
2152 E 4 7113 C 1
3101 B 2 7114 E 3
3104 C 4 7115 E 3
3106 D 4 7116 E 4
3108 D 1 7118 D 4
3111 E 1 8110 B 1
3112 E 1 9100 E 4
3115 C 3 9101 F 4
3117 F 3 9102 E 3
3124 B 1 9103 E 4
3125 B 1 9104 C 4
3126 B 1 9106 E 3
3128 C 2 9107 B 3
3130 B 2 9108 C 3
3132 B 1 9109 D 3
3133 E 4 9110 D 3
3134 E 2 9111 D 3
3135 E 2 9112 C 2
3138 E 2 9113 E 2
3140 E 1 9114 E 2
3141 F 2 9115 D 3
3142 F 3
3143 F 3
3145 B 1
3146 E 3
3147 D 3
3150 D 4
3152 D 4
3157 B 3
3162 E 2
3191 B 4

△: ONLY FOR AUTOSTORE SETS (AS9600)
⧗: NOT FOR AUTOSTORE SETS
✱: ONLY FOR /17 UNITS
●: NOT FOR /17
#: NOT FOR /01 /10 AND /17 UNITS
✣: ONLY FOR /10 UNITS
◆: FOR EXTERNAL LOOPSUPPLY (AS9400)
(AS9500)
⚮: ONLY FOR /01 UNITS



2102 B 2 3156 C 2
2103 B 3 3158 C 1
2107 D 1 3159 E 3
2108 D 1 3160 C 2
2109 C 2 3161 D 3
2110 C 2 3163 E 1
2112 D 4 3192 F 3
2113 D 3 3193 F 1
2114 D 4 3195 B 1
2115 E 3 7117 D 2
2116 D 3 7119 E 3
2120 D 2 7120 D 1
2129 D 2 7130 F 2
2131 D 2
2132 E 1
2133 D 1
2134 C 3
2137 C 3
2138 C 4
2141 D 2
2143 C 3
2147 E 2
2148 E 2
2150 E 1
2153 E 2
2154 E 2
2155 E 2
2156 D 2
2158 C 3
2159 C 1
2160 D 1
2161 D 3
2164 C 3
2165 E 3
2168 E 2
2169 C 1
2190 B 1
2191 B 1
3100 C 2
3102 B 2
3103 C 2
3107 C 3
3109 D 3
3110 D 2
3113 B 2
3114 C 2
3116 C 2
3118 D 2
3119 D 2
3120 D 2
3121 D 2
3122 D 1
3123 D 3
3129 B 3
3131 C 3
3136 E 2
3137 E 2
3139 E 1
3144 F 2
3148 D 3
3149 C 4
3151 D 1
3154 D 2
3155 E 2

△: ONLY FOR AUTOSTORE SETS (AS9600)
⧗: NOT FOR AUTOSTORE SETS
✱: ONLY FOR /17 UNITS
#: NOT FOR /10 AND /17 UNITS
✣: ONLY FOR /10 UNITS

SK...	FREQUENCY	I/P	DISPLAY	ADJUST	O/P	SCOPE/METER
Varicap alignment						
FM 87.5-108MHz			108MHz 87.5MHz	5103 check		8V 2.9V ± 0.3V
MW + 522-1611kHz			1611kHz 522kHz	2139 5108	1	7.8V 1.2V
MW # 530-1700kHz			1700kHz 530kHz	2139 5108		8.0V 1.0V
FM-RF						
FM	87.5MHz mod = 1kHz △f = 22.5kHz	B	87.5MHz	5102	3	max. ↕
	108MHz mod = 1kHz △f = 22.5kHz		108MHz	2105		
Stereo decoder						
FM	98MHz carrier 1mV	B	98MHz	3115	2	76 ± 0.2kHz
AM-IF						
MW	450kHz $ △f = 10kHz (50Hz)	C	530kHz # 522kHz +	5106 5105	3	
AM-RF						
MW *	560kHz # 558kHz +	A	560kHz # 558kHz +	5107	3	max. ↕
	1600kHz # 1494kHz +		1600kHz # 1494kHz +	2135		

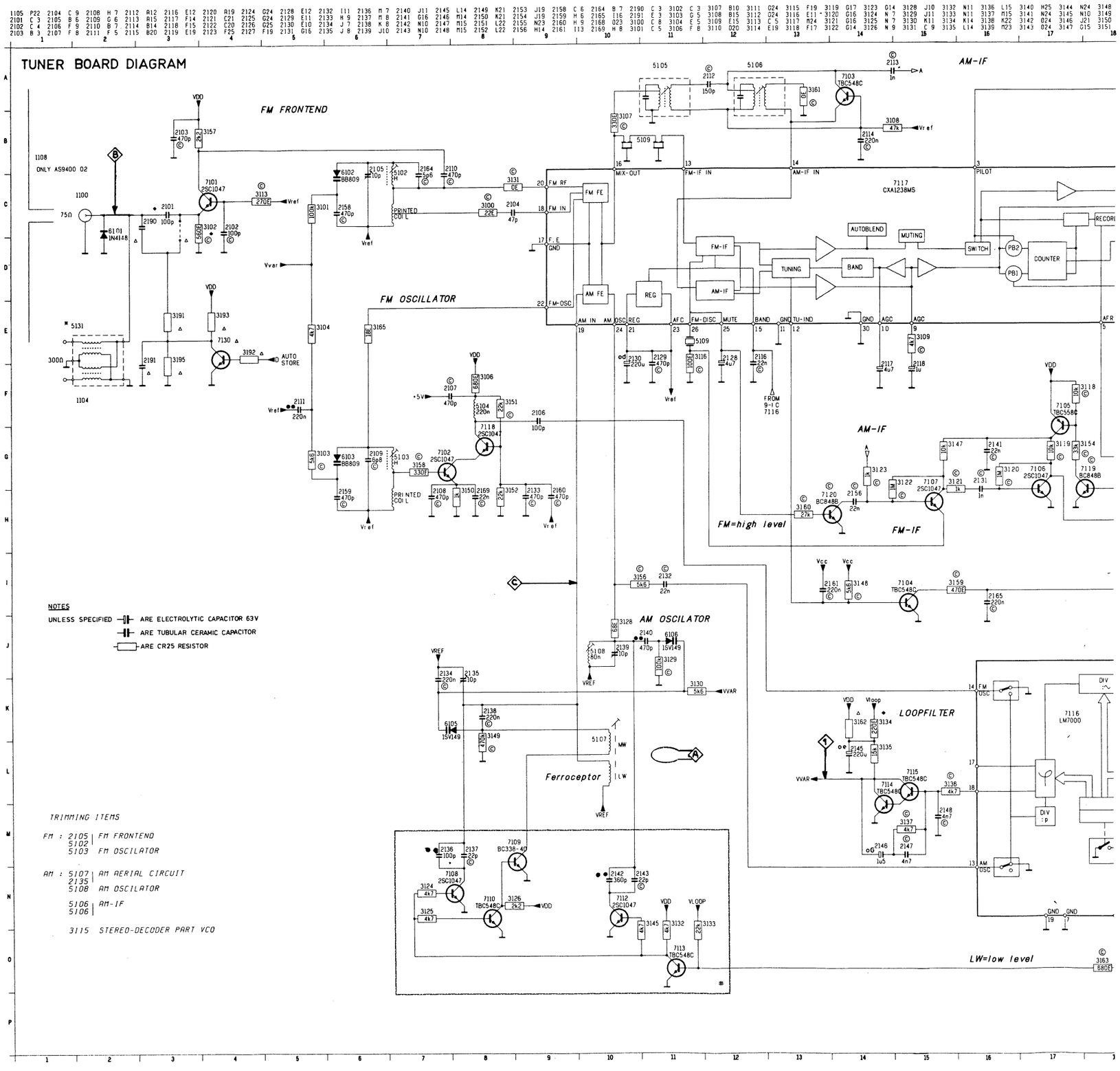
* Mod 1kHz 30% AM
$ via 100nF
\+ For Grid 9kHz
\# For Grid 10kHz

↕ Repeat

+Vdd	: 11.9V
+Vc	: 7.4V FM 8.1V AM
Vref	: 1.2V

	7116		7117	
	FM	AM	FM	AM
1	1.7V	1.7V	0V	1.0V
2	-	-	1.4V	1.5V
3	-	-	0.2V	1.0V
4	-	-	3.2V	3.2V
5	-	-	2.4V	2.4V
6	0.2V	4.9V	2.4V	2.4V
7	0V	0V	7.4V	8.1V
8	0.2V	0.2V	3.8V	3.8V
9	1.3V	0V	1.4V	1.3V
10	0.7V	0.7V	1.0V	1.2V
11	0.1V	0.1V	0V	0V
12	0.1V	0.1V	0.1V	0.2V
13	0.1V	1.8V	1.3V	0V
14	2.8V	0.1V	0V	0V
15	5.6V	5.7V	1.3V	0V
16	5.6V	5.7V	0.2V	0V
17	-	-	0V	0V
18	1.0V	1.0V	0.3V	0V
19	0V	0V	1.2V	1.2V
20	0.9V	0.9V	1.2V	1.2V
21			1.2V	1.2V
22			1.2V	1.2V
23			1.2V	1.2V
24			1.2V	1.2V
25			0.2V	0V
26			3.2V	3.8V
27			1.4V	1.4V
28			1.6V	1.6V
29			1.0V	1.0V
30			0V	0V

....V measured in tuner on postion



AGRAM

ARE ELECTROLYTIC CAPACITOR 63V
ARE TUBULAR CERAMIC CAPACITOR
ARE CR25 RESISTOR

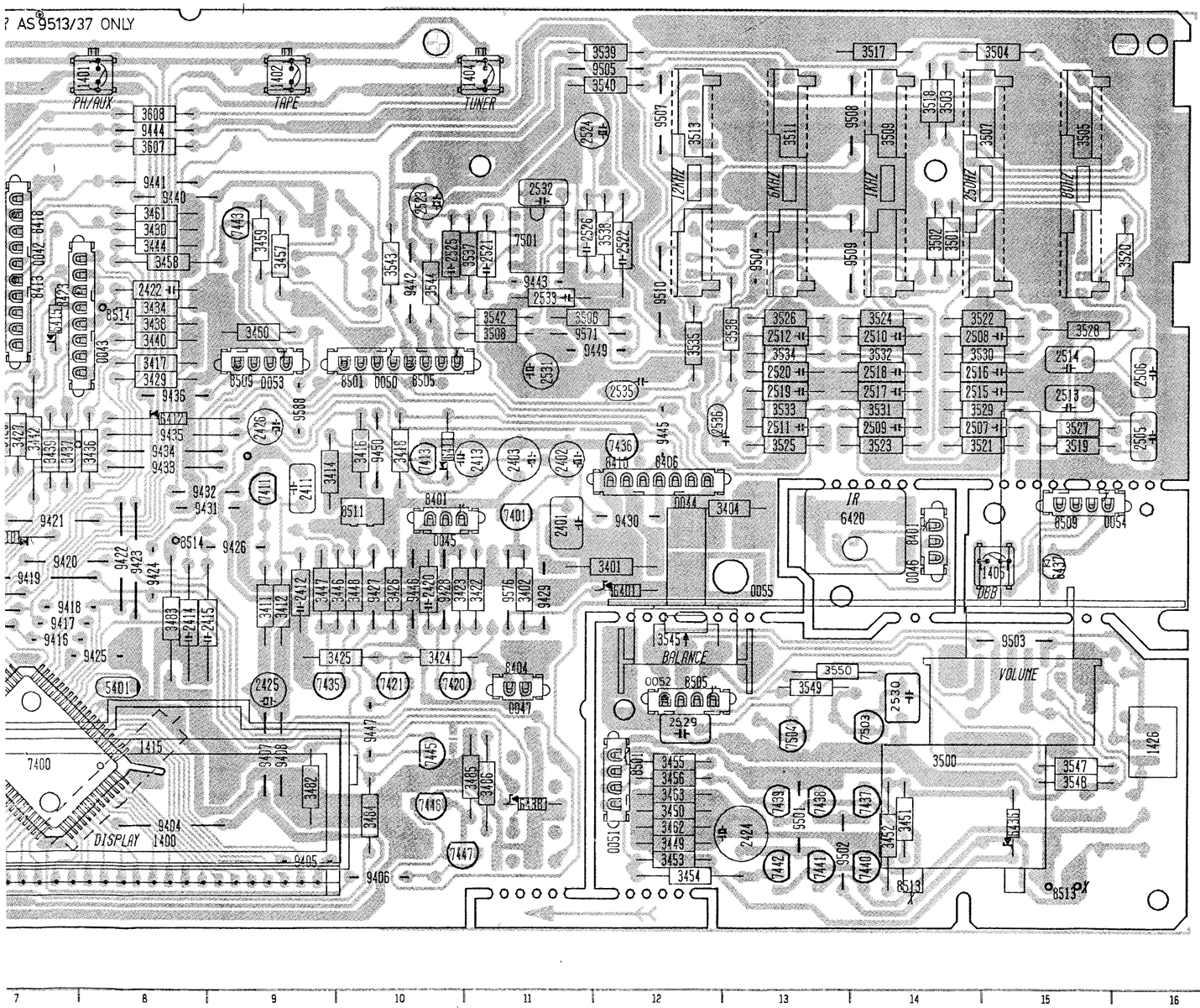
:ND
:TOR
. CIRCUIT
:TOR
:CODER PART VCO

FM FRONTEND
FM OSCILLATOR
AM OSCILATOR
LOOPFILTER
Ferroceptor
AM-IF
FM-IF
FM=high level
TUNED=high level
LW=low level
AM=low level
STEREO=low level
AUTO STORE
PRINTED COIL
TO 15-IC 7117
FROM 9-IC 7116
7117 CXA1238MS
7116 LM7000
AS9400
AS9500
AS9600
AS9604
AH807
AH808
AH809
RF PART
NOT FOR /10 AND /17 /01 UNITS
* NOT FOR AUTOSTORE SETS
x ONLY FOR /17 UNITS
△ ONLY FOR AUTOSTORE SETS
+ ONLY FOR /10 UNITS
● ONLY FOR /01 UNITS

CS 33 946

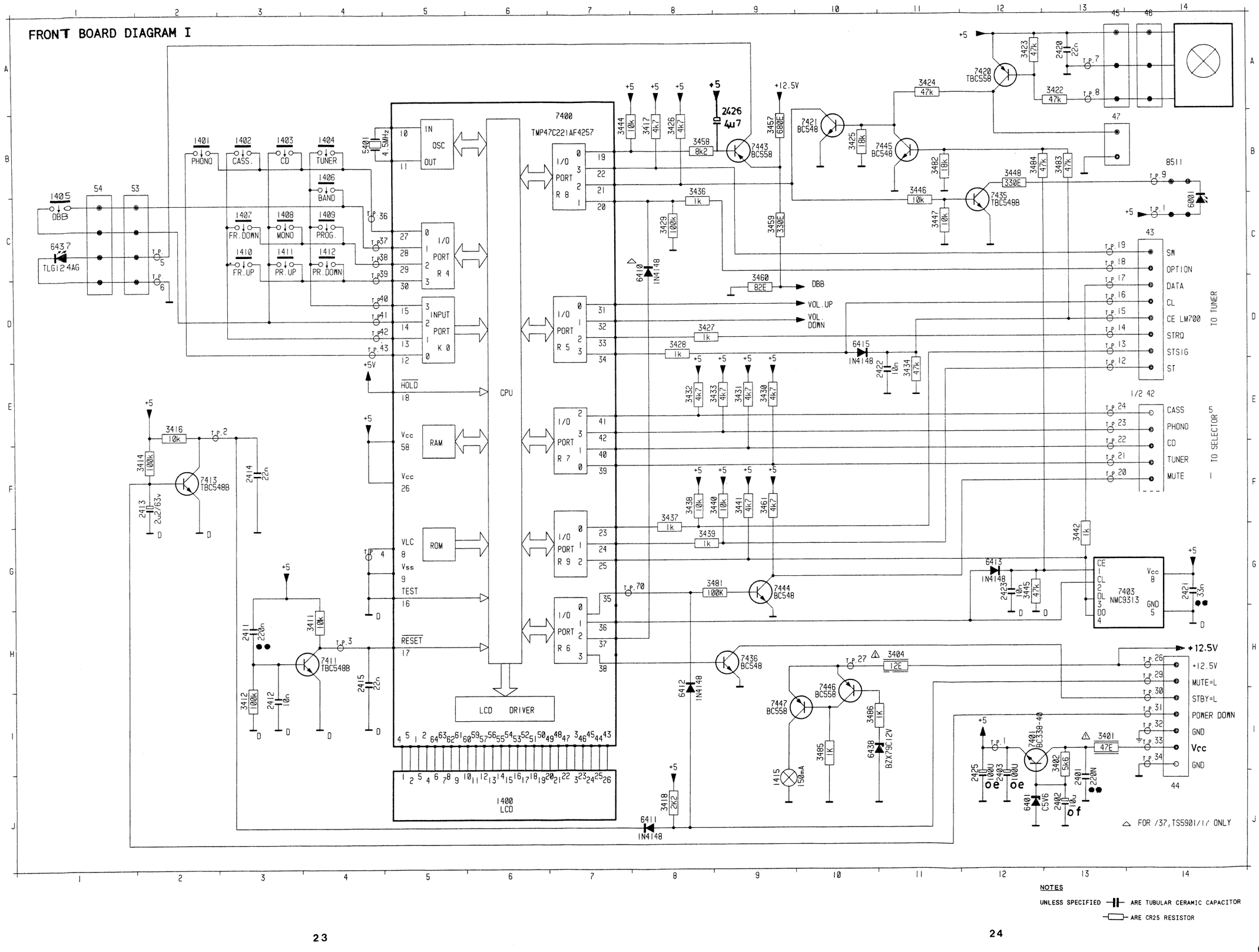
| | | |

3440	D 8	3455	G12	3486	G11	3518	B14	3532	D14	3548	G15	3564	D 5	3586	D 4	3602	E 2	3618	B 3	6420	E14	6561	E 5	7435	F 9	7503	G14	2553	C5	3553	C5	9584	C6
3441	G 5	3456	G12	3500	G14	3519	D15	3533	D13	3549	F13	3565	E 4	3587	D 5	3603	C 2			6436	G15	6562	E 5	7436	D12	7504	F14	2554	B5	3554	C6	9585	C5
3442	D 7	3457	C 9	3501	C14	3520	C16	3534	D13	3550	F14	3566	E 4	3588	D 4	3604	E 2			6437	E15	6563	B 3	7437	G14	7551	B 4	2569	C4	3573	C5	9586	B5
3444	C 8	3458	C 8	3502	C14	3521	D14	3535	D12	3551	B 3	3567	E 4	3589	B 3	3607	B 8	3621	F 3	6438	G11	6564	B 3	7438	G13	7552	D 2	2570	B4	3575	C5		
3445	G 6	3459	C 9	3503	B14	3522	C14	3536	C13	3552	B 3	3568	E 4	3590	B 3	3608	B 8	3622	F 2	6551	C 3	6565	C 3	7439	G13	7553	E 3	2572	B5	3576	C4		
3446	E10	3460	C 9	3504	A15	3523	D14	3537	C11	3555	C 6	3569	C 5	3591	C 3	3609	F 1	3623	D 1	6552	D 3	6566	C 3	7440	H14	7554	F 3	2577	C5	3577	C4		
3447	E 9	3461	C 8	3505	B15	3524	C14	3538	C12	3556	C 6			3592	C 3	3610	F 2	3624	2	6553	C 3	6567	F 2	7441	H13			2578	B5	3578	B5		
3448	E10	3462	G12	3506	C11	3525	D13	3539	A12	3557	D 5	3571	C 5	3595	C 2	3611	F 2	5401	F 8	6554	D 3	7400	G 7	7442	H13			2597	C5	3580	B4		
3449	G12	3463	G12	3507	B15	3526	C13	3540	B12	3558	D 5	3572	B 5	3596	E 3	3612	F 2	6401	E12	6555	E 4	7401	E11	7443	C 9			2598	B5	3574	B5		
3450	G12	3481	C 7	3508	C11	3527	D15	3542	C11	3559	D 5	3581	C 4	3597	C 2	3613	F 1	6410	E 7	6556	E 4	7403	G 5	7444	C 7								
3451	G14	3482	G 9	3509	B14	3528	C15	3543	C10	3560	D 5	3582	C 4	3598	E 3	3614	F 2	6411	D10	6557	E 3	7411	E 9	7445	G10								
3452	G14	3483	F 8	3511	B13	3529	D14	3544	C10	3561	E 5	3583	C 5	3599	C 2	3615	D 4	6412	D 8	6558	E 3	7413	D10	7446	G10								
3453	G12	3484	G10	3513	B12	3530	D14	3545	F12	3562	D 5	3584	C 4	3600	E 2	3616	B 4	6413	G 5	6559	F 3	7420	F10	7447	G10								
3454	H12	3485	G11	3517	A14	3531	D14	3547	G15	3563	E 5	3585	D 4	3601	C 2	3617	B 3	6415	C 7	6560	F 3	7421	F10	7501	C11								



	8401	E14	9502	G13			
	8401	E10	9503	F15			
	8404	F11	9504	C13			
	8406	D12	9505	A12			
A	8410	D12	9507	B12			
	8413	C 7	9508	B13			
	8418	C 7	9509	C13			
	8423	C 7	9510	C12			
	8501	G12	9551	F 2			
	8501	D10	9552	F 2			
	8505	D10	9553	F 3			
	8505	F12	9555	F 4			
B	8509	D 9	9556	F 5			
	8509	E15					
	8511	E10					
	8513	H14	9559	D 3			
	8513	H15	9560	D 3			
	8514	C 8	9561	F 5			
	8514	E 8	9565	C 5			
	8551	A 3	9568	B 4			
	9401	G 6	9571	C11			
C	9402	G 6	9576	E11			
	9403	G 7	9577	C 4			
	9404	G 8	9578	C 5			
	9405	H 9	9579	C 4			
	9406	H10	9580	B 4			
	9407	G 9	9581	B 5			
	9408	G 9	9582	B 4			
	9409	F 6	9583	C 6			
D	9410	F 6	9588	D 9			
	9411	F 6					
	9412	F 6					
	9413	F 6					
	9414	F 6					
	9415	E 7					
	9416	F 7					
	9417	F 7					
	9418	F 7					
E	9419	E 7					
	9420	E 7					
	9421	E 7					
	9422	E 8					
	9423	E 8					
	9424	E 8					
	9425	F 8					
	9426	E 9					
F	9427	E10					
	9428	E10					
	9429	E11					
	9430	E12					
	9431	E 9					
	9432	E 8					
	9433	D 8					
	9434	D 8					
	9435	D 8					
G	9436	D 8					
	9438	C 7					
	9440	B 8					
	9441	B 8					
	9442	C10					
	9443	C11					
	9444	B 8					
	9445	D12					
H	9446	E10					
	9447	G10					
	9449	D12					
	9450	D10					
	9501	G13					

FRONT BOARD DIAGRAM I

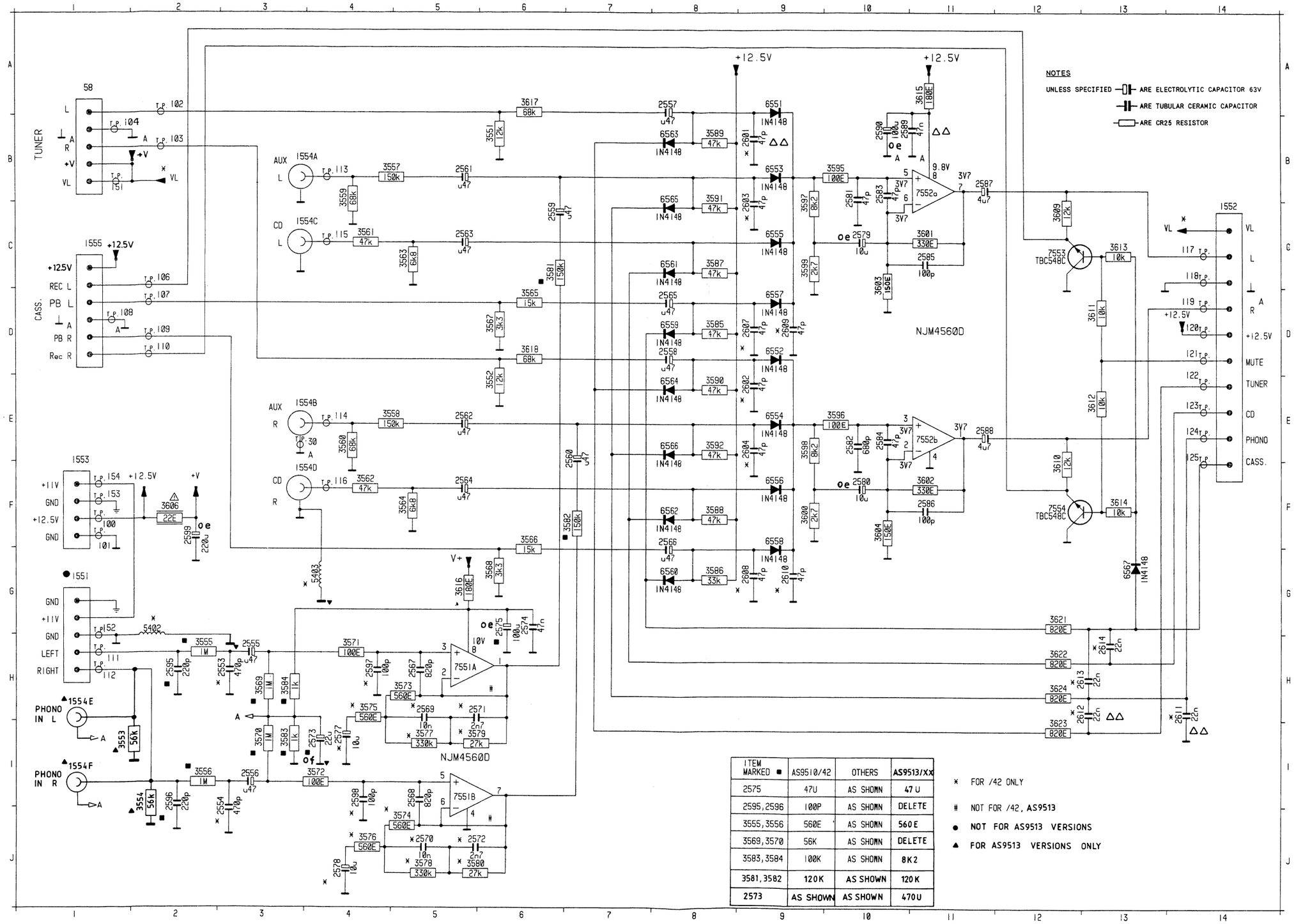


NOTES

UNLESS SPECIFIED —||— ARE TUBULAR CERAMIC CAPACITOR

—▭— ARE CR25 RESISTOR

FRONT BOARD DIAGRAM II



ITEM MARKED ■	AS9510/42	OTHERS	AS9513/XX
2575	47U	AS SHOWN	47 U
2595,2596	100P	AS SHOWN	DELETE
3555,3556	560E	AS SHOWN	560 E
3569,3570	56K	AS SHOWN	DELETE
3583,3584	100K	AS SHOWN	8K2
3581,3582	120K	AS SHOWN	120 K
2573	AS SHOWN	AS SHOWN	470U

* FOR /42 ONLY

\# NOT FOR /42, AS9513

● NOT FOR AS9513 VERSIONS

▲ FOR AS9513 VERSIONS ONLY

58 A1 3602 F11
1551 G1 3603 C10
1552 C14 3604 F10
1553 F1 3606 F12
1554A B3 3609 C12
1554B E3 3610 E12
1554C F3 3611 D13
1554D C3 3612 E13
1555 C1 3613 C13
2553 H3 3614 F13
2554 J3 3615 A11
2555 H3 3616 G4 5
2556 I3 3617 A6
2557 A8 3618 D6
2558 D8 3621 G12
2559 C5 3622 H12
2560 E5 3623 I12
2561 F5 3624 I12
2562 F5 5402 G4
2563 G5 5403 G4
2564 F5 6551 A9
2565 D8 6552 D9
2566 F8 6553 B9
2567 H5 6554 E9
2568 I5 6555 C9
2569 H5 6556 F9
2570 J5 6557 D9
2571 H5 6558 I9
2572 J5 6559 D8
2573 I4 6560 G8
2574 G6 6561 C8
2575 G1 6562 F8
2577 I4 6563 B8
2578 J4 6564 E8
2579 C10 6565 C8
2580 F10 6566 E8
2581 B10 6567 G13
2582 E10 7551A H5
2583 B10 7551B I5
2584 E10 7552a B11
2585 F11 7552b E11
2586 F11 7553 C12
2587 B11 7554 F12
2588 E11
2589 B10
2590 B10 1554E H1
2595 H2 1554F I1
2596 I2 3553 I1
2597 H4 3554 I2
2598 I4
2599 F2
2601 B9
2602 E9
2603 C9
2604 E9
2607 D9
2608 G9
2609 G9
2610 G9
2611 HI4
2612 HI3
2613 HI3
2614 HI3
3551 B6
3552 E6
3555 H2
3556 I2
3557 B4
3558 B4
3559 B4
3560 E4
3561 C4
3562 F4
3563 C5
3564 E5
3565 D6
3566 I6
3567 D6
3568 G6
3569 H3
3570 I4
3571 H4
3572 I4
3573 H5
3574 J5
3575 H4
3576 J4
3577 I5
3578 J5
3579 I5
3580 J5
3581 C6
3582 F7
3583 I3
3584 H3
3585 D8
3586 G8
3587 F8
3588 I8
3589 B8
3590 E8
3591 C8
3592 F8
3595 B8
3596 E8
3597 B8
3598 E8
3599 B8
3600 E8
3601 C8
3602 F8
3603 C8
3604 F8
3609 C12
3610 E12
3611 D13
3612 E13
3613 C13
3614 F13
3615 A11
3616 G4 5
3617 A6
3618 D6
3621 G12
3622 H12
3623 I12
3624 I12
5402 G4
5403 G4
6551 A9
6552 D9
6553 B9
6554 E9
6555 C9
6556 F9
6557 D9
6558 I9
6559 D8
6560 G8
6561 C8
6562 F8
6563 B8
6564 E8
6565 C8
6566 E8
6567 G13
7551A H5
7551B I5
7552a B11
7552b E11
7553 C12
7554 F12

+V : 11.0V

MOT : 12.5V

	7401	7420	7421
e :	5.1V	5.0V	0V
b :	5.7V	5.0V	0V
c :	16.5V	0V	3.7V

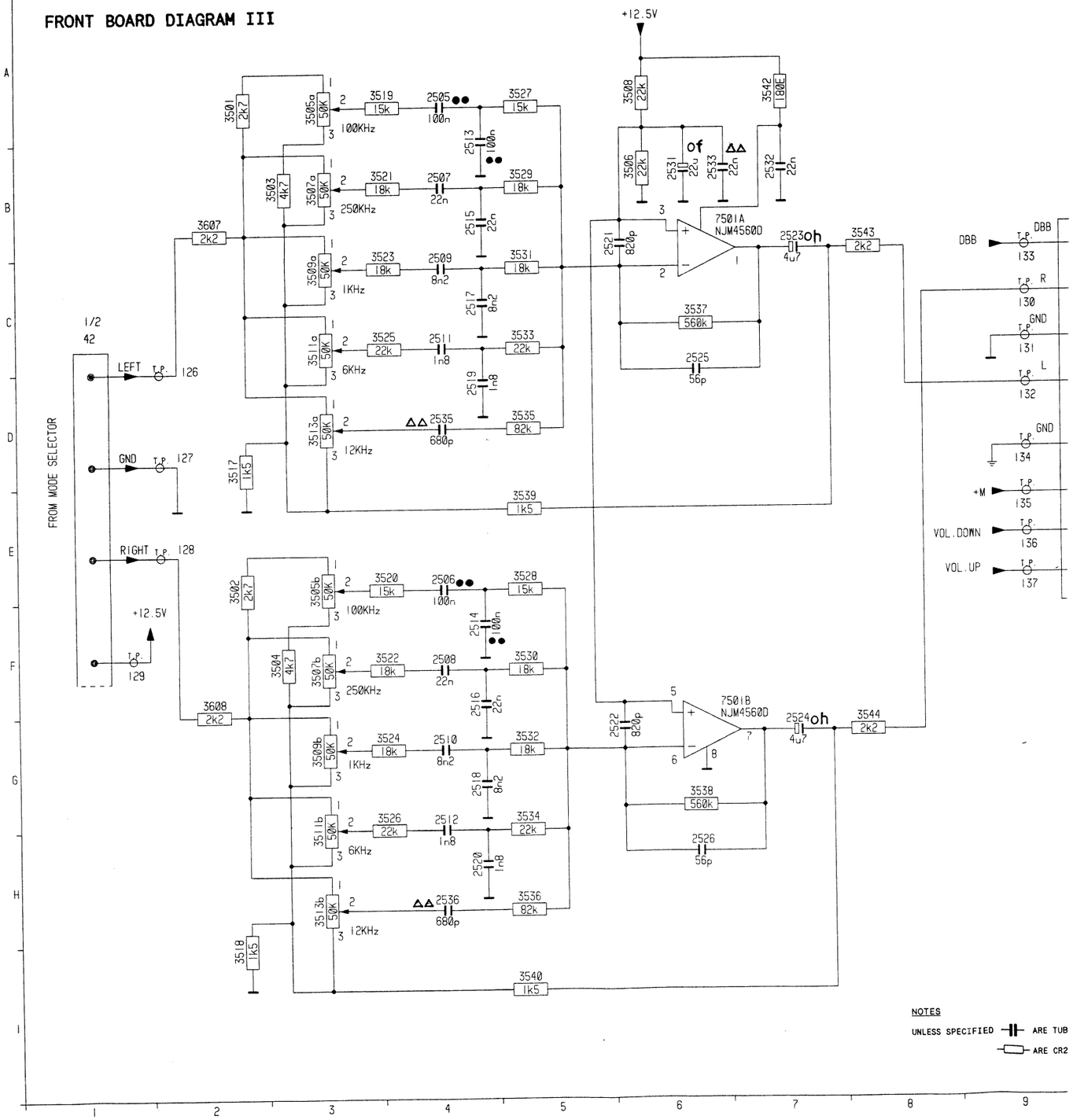
	7443	7445	7446
e :	5.1V	5.0V	10.7V
b :	5.7V	5.0V	10.1V
c :	16.5V	0V	10.0V

7501	
1 :	6.2V
2 :	6.2V
3 :	6.2V
4 :	0V
5 :	6.2V
6 :	6.2V
7 :	6.2V
8 :	11.7V

7552	
1 :	4.8V
2 :	4.8V
3 :	4.8V
4 :	0V
5 :	4.8V
6 :	4.8V
7 :	4.8V
8 :	9.6V

ITEM	NORMAL	VOLUME DOWN	VOLUM UP
7437			
e :	10.2V	0.7V	6.1V
b :	9.3V	0V	6.8V
c :	12.5V	9.0V	9.0V
7438			
e :	10.2V	0.7V	6.1V
b :	9.3V	0V	6.8V
c :	0V	0V	0V
7439			
e :	0V	0V	0V
b :	0.5V	0.7V	0.2V
c :	9.3V	0V	6.8V
7440			
e :	10.2V	6.1V	0.7V
b :	9.3V	6.8V	0V
c :	12.5V	9.0V	9.0V
7441			
e :	10.2V	6.1V	0.7V
b :	9.3V	6.8V	0V
c :	12.5V	9.0V	9.0V
7442			
e :	0V	0V	0V
b :	0.2V	0.2V	0.7V
c :	9.3V	6.8V	0V

42	C 1	2424	G13	2509	C 4	2514	F 4	2519	D 4	2524	G 7	2531	B 6	3449	G12	3454	H14	3500A	A14	3503	B 3	3507a	B 3	3511a	C 3	3518	I 2
50	B10	2505	A 4	2510	G 4	2515	B 4	2520	H 4	2525	C 6	2532	B 7	3450	G12	3455	G11	3500B	C14	3504	F 3	3507b	F 3	3511b	G 3	3519	A 4
51	F10	2506	E 4	2511	C 4	2516	F 4	2521	B 6	2526	H 6	2533	B 6	3451	G11	3456	H11	3500c	I13	3505a	A 3	3508	A 6	3513a	D 3	3520	E 4
52	B10	2507	B 4	2512	G 4	2517	C 4	2522	G 6	2529	B13	2535	D 4	3452	G14	3462	G13	3501	A 2	3505b	E 3	3509a	C 3	3513b	H 3	3521	B 4
1426	B15	2508	F 4	2513	A 4	2518	G 4	2523	B 7	2530	C13	2536	H 4	3453	G14	3463	G13	3502	E 2	3506	B 6	3509b	G 3	3517	D 2	3522	F 4



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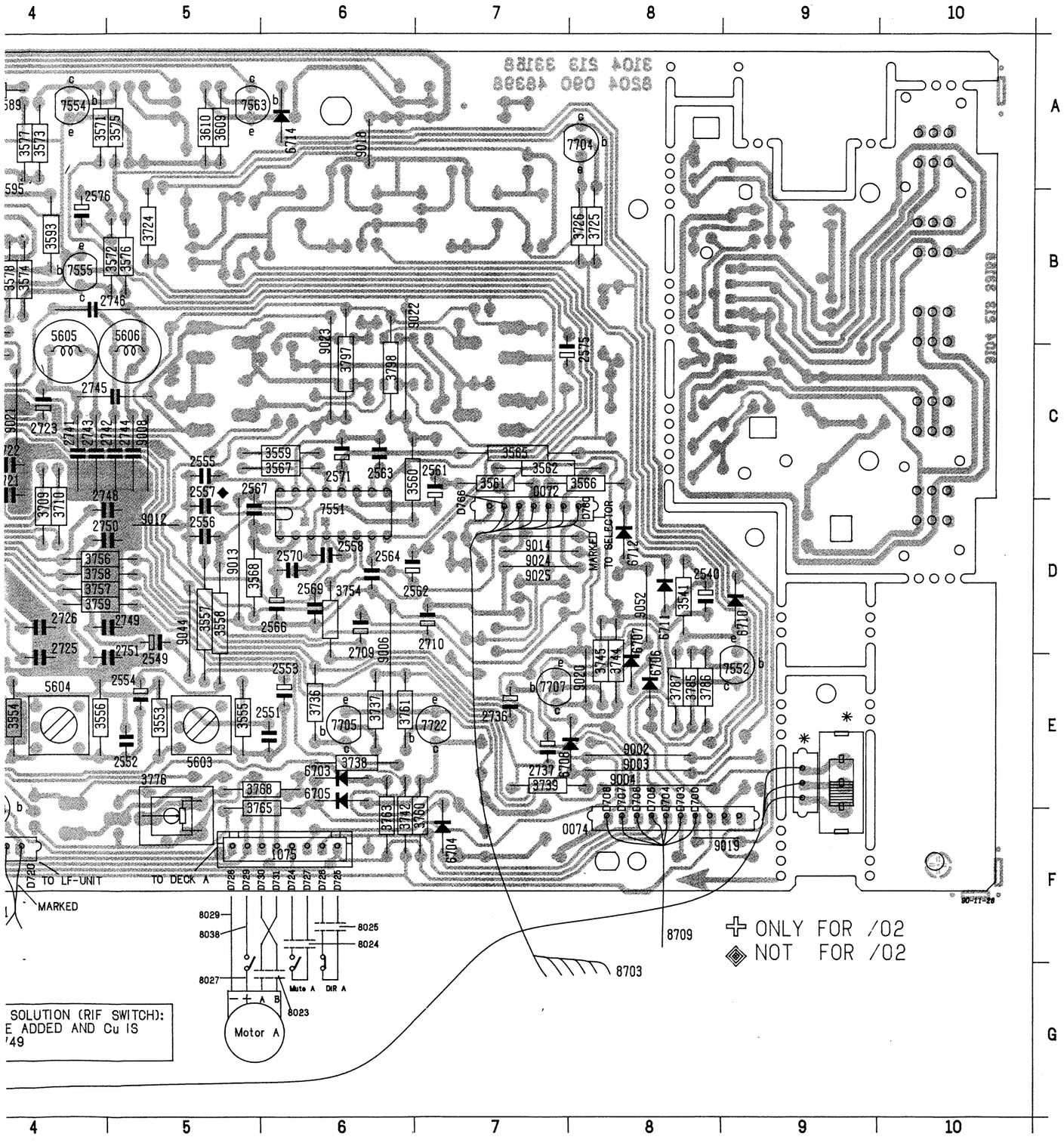
RECORDER BOARD

0072	C 7	2727	E 3	3716	C 1	7704	A 8
0073	F 4	2728	E 3	3717	C 4	7705	E 6
0074	F 8	2731	D 2	3718	C 4	7707	E 7
1071	F 2	2732	D 2	3724	B 5	7722	E 7
1072	E 4	2733	C 3	3725	B 8	7724	F 4
1073	E 2	2734	C 3	3726	B 8	8701	F 4
1074	B 2	2736	E 7	3727	E 3	8703	G 8
1075	F 6	2737	E 7	3728	E 3	8709	F 8
2540	D 8	2741	C 4	3729	C 3	9002	E 8
2549	E 5	2742	C 5	3730	C 3	9003	E 8
2551	E 6	2743	C 4	3731	C 3	9004	E 8
2552	E 5	2744	C 5	3732	C 3	9006	D 6
2553	E 6	2745	C 4	3736	E 6	9008	C 5
2554	E 5	2746	B 5	3737	E 6	9012	D 5
2555	C 5	2748	D 5	3738	E 6	9013	D 5
2556	D 5	2749	D 5	3739	E 7	9014	D 7
2557	C 5	2750	D 5	3742	F 6	9018	A 6
2558	D 6	2751	E 5	3743	C 3	9019	F 9
2561	C 7	3541	D 8	3744	E 8	9020	E 8
2562	D 7	3551	E 3	3745	E 8	9021	C 4
2563	C 6	3552	E 3	3747	E 3	9022	B 7
2564	D 6	3553	E 5	3748	E 3	9023	B 6
2566	D 6	3554	E 4	3749	C 2	9024	D 7
2567	C 5	3555	E 5	3754	D 6	9025	D 7
2569	D 6	3556	E 4	3756	D 4	9030	B 1
2570	D 6	3557	D 5	3757	D 4	9041	B 3
2571	C 6	3558	D 5	3758	D 4	9044	D 5
2575	C 8	3559	C 6	3759	D 4	9052	D 8
2576	B 4	3560	C 7	3760	F 7	9054	E 4
2577	A 4	3561	C 7	3761	E 6	9055	E 2
2578	B 4	3562	C 7	3763	F 6	9056	B 2
2579	A 4	3565	C 7	3765	F 6		
2580	B 4	3566	C 8	3766	F 2		
2581	A 3	3567	C 6	3768	E 6		
2582	B 3	3568	D 5	3774	E 3		
2583	A 3	3571	A 4	3776	E 5		
2584	B 3	3572	B 5	3785	E 8		
2585	A 3	3573	A 4	3786	E 8		
2586	B 3	3574	B 4	3787	E 8		
2589	A 4	3575	A 5	3795	B 1		
2590	B 4	3576	B 5	3796	B 1		
2595	B 4	3577	A 4	3797	C 6		
2601	A 3	3578	B 4	3798	C 6		
2602	B 3	3579	A 3	5010	E 3		
2603	A 2	3580	B 3	5011	E 2		
2604	B 2	3581	A 3	5012	C 2		
2605	A 2	3582	B 3	5601	E 1		
2606	B 2	3583	A 3	5602	E 2		
2607	E 1	3584	B 3	5603	E 5		
2608	E 2	3587	A 4	5604	E 4		
2609	D 1	3588	B 4	5605	B 4		
2610	D 2	3593	B 4	5606	B 5		
2611	D 1	3601	B 2	5701	C 2		
2612	D 1	3602	B 3	6703	E 6		
2701	D 4	3603	A 2	6704	F 7		
2702	D 3	3604	B 2	6705	E 6		
2705	D 2	3605	A 2	6706	E 8		
2706	D 2	3606	B 2	6707	D 8		
2707	C 3	3607	A 2	6708	E 8		
2708	C 3	3608	B 2	6710	D 9		
2709	E 6	3609	A 5	6711	D 8		
2710	D 7	3610	A 5	6712	D 8		
2712	C 3	3701	E 4	6713	C 3		
2713	C 2	3702	E 3	6714	A 6		
2714	C 2	3703	E 2	6731	C 2		
2715	C 1	3704	E 2	6732	C 3		
2716	D 1	3705	E 2	7551	D 6		
2717	D 2	3706	E 2	7552	E 9		
2719	C 3	3707	C 3	7554	A 4		
2721	C 4	3708	C 4	7555	B 4		
2722	C 4	3709	D 4	7556	B 3		
2723	C 4	3710	D 4	7563	A 5		
2724	C 4	3711	C 4	7564	A 2		
2725	D 4	3714	C 2	7565	B 2		
2726	D 4	3715	D 1	7701	D 3		

ONLY FOR /02

NOT FOR /02

* ONLY FOR SERVICE SOLUTION (RIF SWITCH): 2715 AND 3749 ARE ADDED AND Cu IS REMOVED UNDER 3749



Bias Oscillator Adjustment

Adjust	Voltages across the 3703 or 3704
3715	13mV in Cr mode
3716	13mV in Cr mode

7564

e : 5.9V
b : 7.1VFe
0VCr
c : 6.3VFe
6.0VCr

7565

e : 5.9V
b : 7.1VFe
0VCr
c : 6.3VFe
6.0VCr

7704

e : 0V
b : 0V
0.7V
c : 12.4V
0.1V

7705

e : 0V
b : 0V
0.7V
c : 10.2V
0.1V

7707

e : 12.2rec
11.5V
0V
b : 11.9V
10.9V
0V
c : 0V
11.4V

7552

e : 0V
b : 0V
0.8rec
c : 11.6V
0.1Vrec

7554

e : 5.9V
b : 6.6V
0.3Vrec
c : 5.9V

7555

e : 5.9V
b : 6.6V
0.3Vrec
c : 5.9V

7563

e : 12.4VFe
6.0VCr
b : 11.7VFe
6.0VCr
c : 12.4VFe
0VCr

7701

1 : 5.9V
2 : 5.9V
3 : 5.9V
4 : 5.9V
5 : 5.9V
6 : 5.9V
7 : 9.6V
0.1V
8 : 10.3V
0.1V
9 : 10.2V
10 : 0V
5.5Vrec
11 : 0.3V
12 : 5.9V
13 : 0V
14 : 11.7V
15 : 5.1V
16 : 11.7V
17 : 0V
18 : 11.0V
19 : 0.7V
20 : 11.7V
21 : 5.9V
22 : 5.9V
23 : 5.9V
24 : 5.9V
25 : 5.9V
26 : 5.9V
27 : 5.9V
28 : 5.9V
29 : 5.9V
30 : 5.9V
31 : 5.9V
32 : 6.0V
33 : 6.0V
34 : 5.9V
35 : 5.7V
36 : 5.9V
37 : 5.8V
38 : 5.9V
39 : 6.2V
40 : 6.2V

7551

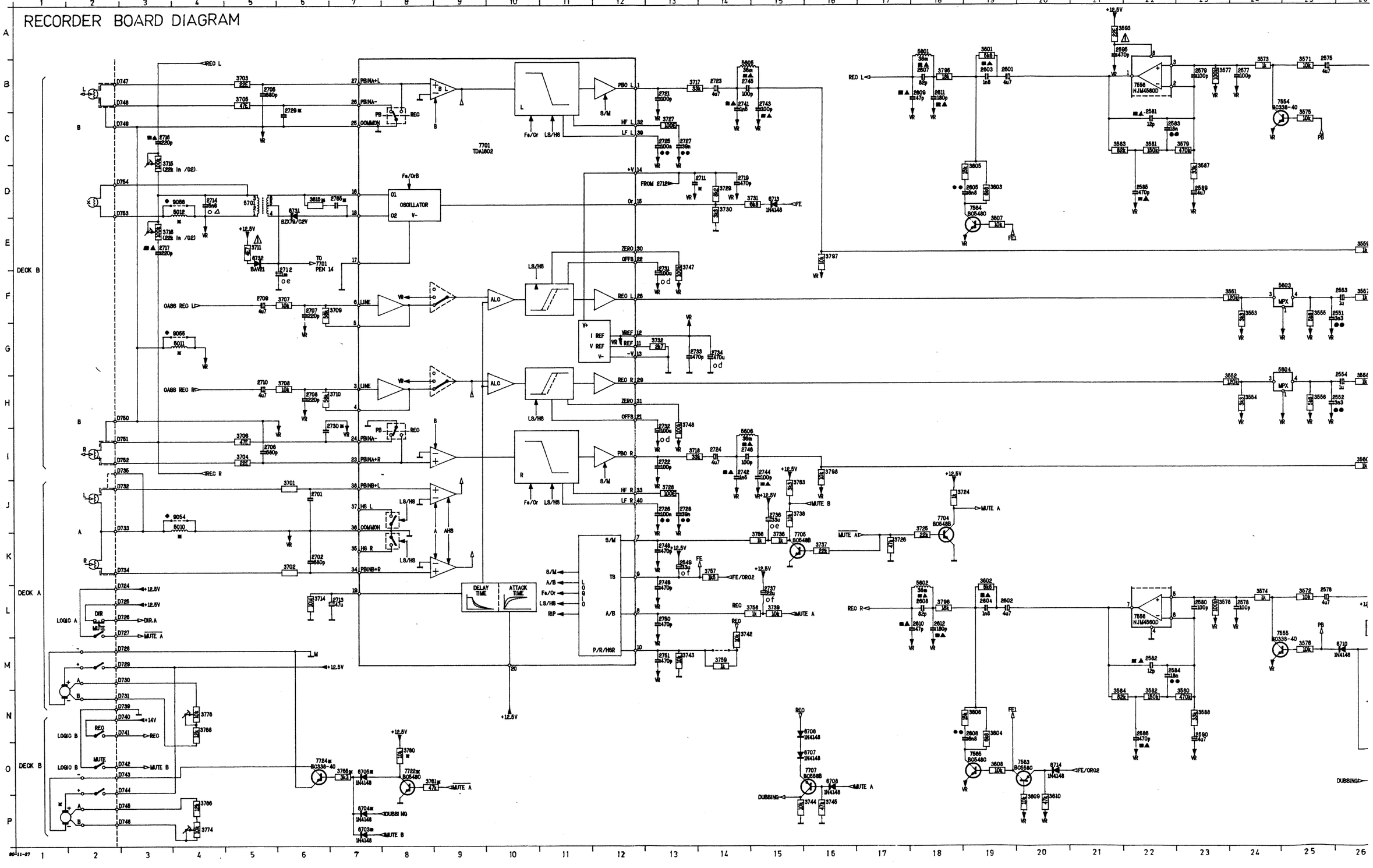
1 : 5.9V
2 : 12.6V
3 : 5.9V
4 : 5.9V
5 : 0Vdn
12.7Vdf
6 : 5.9V
7 : 0.4V
8 : 5.9V
9 : 5.9V
10 : 0.4V
11 : 5.9V
12 : 0V
3.9Vrec
11.0V
13 : 12.0V
14 : 5.9V
15 : 0V
16 : 5.9V

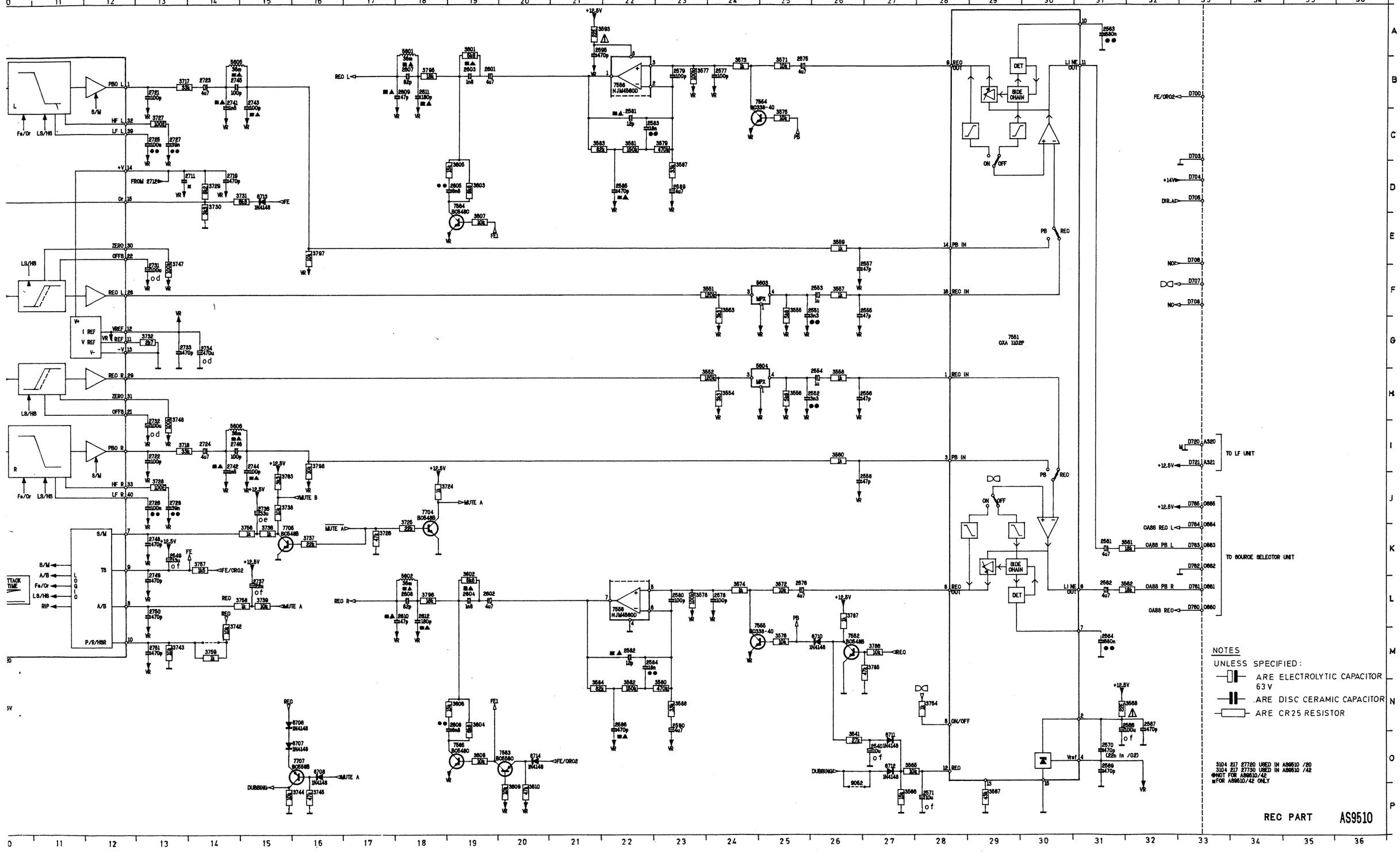
7556

1 : 5.9V
2 : 5.9V
3 : 5.9V
4 : 0V
5 : 5.9V
6 : 5.9V
7 : 5.9V
8 : 12.6V

....V measured in tape on position
___V measured in tape A play position
===V measured in tape dubbing on position
....Vrec measured in tape recording position
....Vdn measured in dolby on position
....Vdf measured in dobly off position
....VFe measured in tape Fe on position
....VCr measured in tape Cr on position

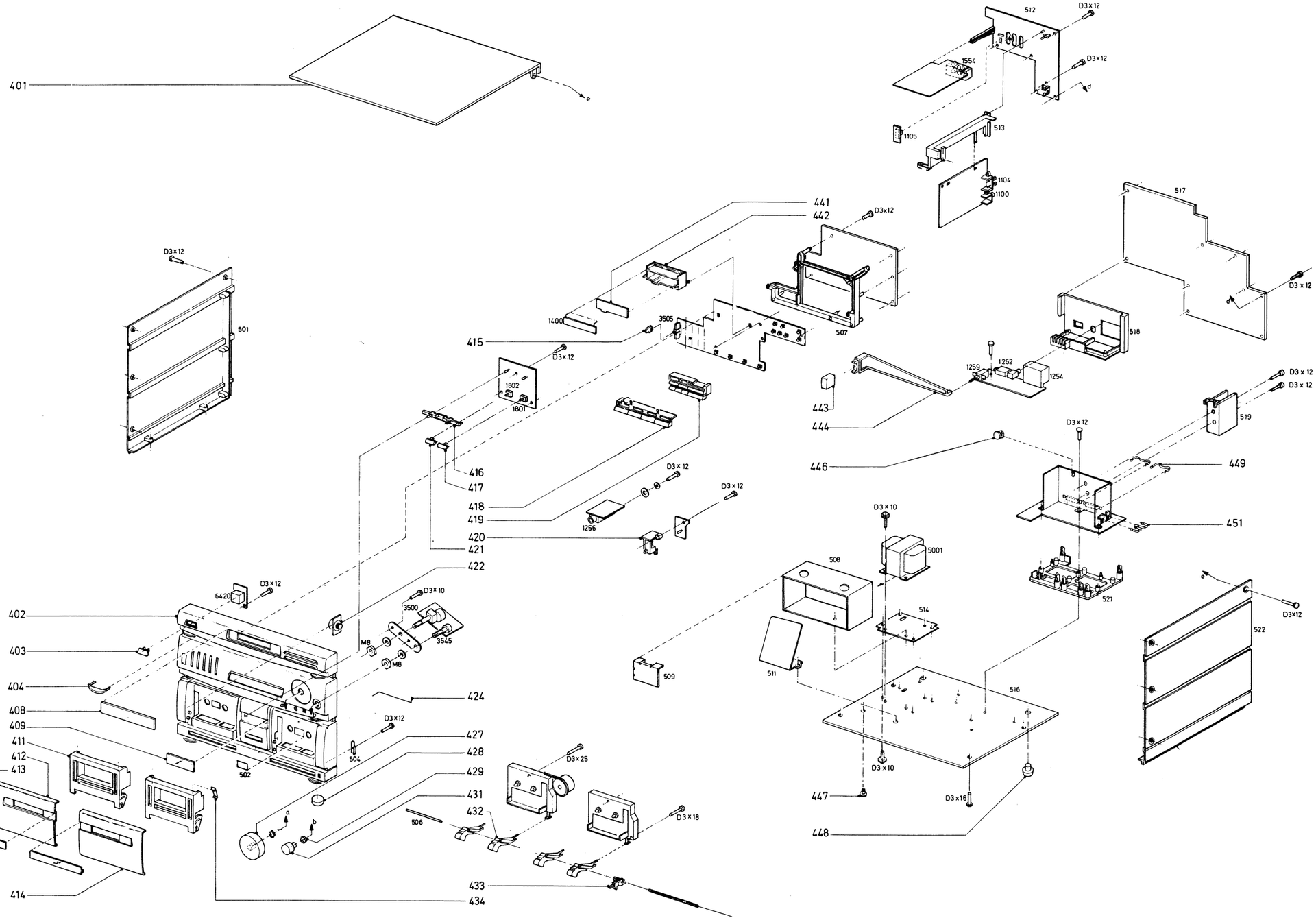
RECORDER BOARD DIAGRAM




REC L
REC R
REC
PB
LINE OUT
LINE IN
REC OUT
PB IN
REC IN
ON/OFF
SIDE CHAIN
DET
NJM4560D
MPX
7561
CXA 1102P
FE/ORO2
DUBBING
MUTE A
MUTE B
MUTE A1
TO LF UNIT
TO SOUROE SELECTOR UNIT
NOTES
UNLESS SPECIFIED:
ARE ELECTROLYTIC CAPACITOR 63 V
ARE DISC CERAMIC CAPACITOR
ARE CR25 RESISTOR
3104 217 27720 USED IN AS9510 /20
3104 217 27730 USED IN AS9510 /42
*NOT FOR AS9510/42
=FOR AS9510/42 ONLY
REC PART AS9510

CS 33 952

26924
07/01/91



401 4
402 ϕ 4
402 Θ 4
403 4
404 4

408 4
409 4
411 4
412 ϕ 4
412 Θ 4

413 4
414 ϕ 4
414 Θ 4
415 4
416 4

ß Fo
ϕ Fo
Φ Fo
Θ No

GB WARNING

All ICs and many other semi-
susceptible to electrostatic d
Careless handling during rep
drastically.
When repairing, make sure th
connected with the same pot
of the set via a wrist wrap wi
Keep components and tools
potential.

F ATTENTION

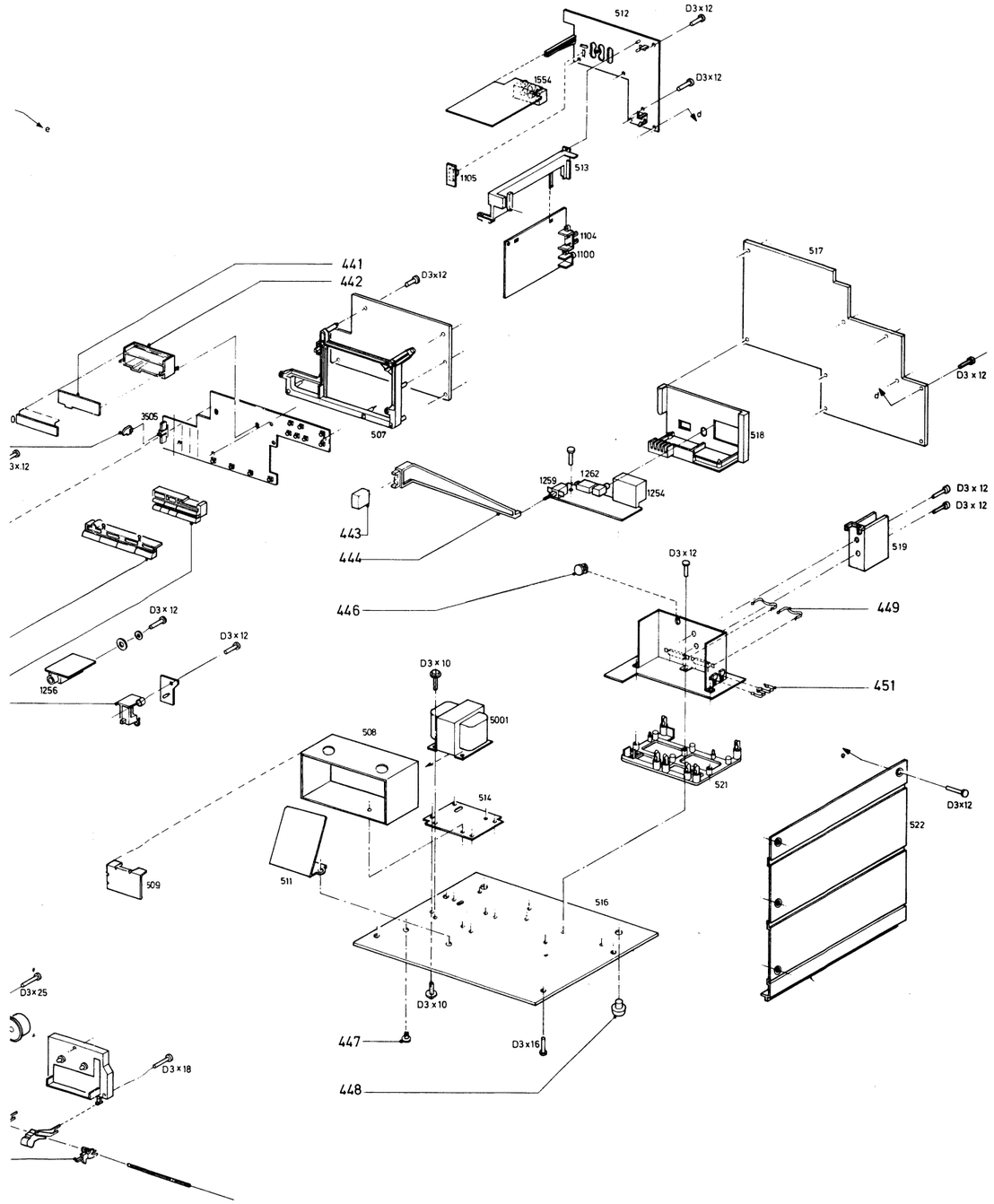
Tous les IC et beaucoup d'au
semi-conducteurs sont sensil
décharges statiques (ESD).
Leur longévité pourrait être c
écourtée par le fait qu'aucun
prise à leur manipulation.
Lors de réparations, s'assure
au même potentiel que la ma
enfiler le bracelet serti d'une
sécurité.
Veiller à ce que les composar
outils que l'on utilise soient é
potentiel.

GB

Safety regulations require
condition and that parts v
be used.

NL

Veiligheidsbepalingen vere
zijn oorspronkelijke toest
identiek aan de gespecific



401		4822 426 60587	417		4822 410 60588	441		4822 466 70666
402	ϕ	4822 426 51475	418		4822 410 60585	442		4822 256 91477
402	Θ	4822 426 51476	419		4822 410 60584	443		4822 413 70269
403		4822 450 61524	420		4822 410 60586	444		4822 535 93055
404		4822 426 60577	421		4822 410 61101	446		4822 401 11336
408		4822 333 40404	422		4822 529 10257	447		4822 532 52321
409		4822 450 61683	424		4822 492 70732	448		4822 462 41535
411		4822 443 63037	427		4822 413 41561	449		4822 255 40128
412	ϕ	4822 443 63251	428		4822 462 40683	451		5322 255 40397
412	Θ	4822 443 63265	429		4822 492 51374			
413		4822 450 61525	429		4822 492 51374	IFU	Φ	4822 736 21036
414	ϕ	4822 443 63249	431		4822 413 41562	IFU	Θ	4822 736 21072
414	Θ	4822 443 63264	432		4822 410 60587	IFU	ß	4822 736 21049
415		4822 411 61667	433		4822 410 60589			
416		4822 256 91603	434		4822 492 52197			

ß For -/13 only
ϕ For -/37/57 only
Φ For -/21/70/90 only
Θ Not for -/37/57 only

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

ESD

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

MISCELLANEOUS

1100	ϕ	AERIAL SOCKET	4822 267 31128
1104	Θ	SOCKET AERIAL	4822 267 40668
1105		GRID SWITCH	4822 277 30682
1254		SPEAKER SOCKET	4822 267 31107
1255		REMOTE SOCKET	4822 267 31051
1256		SOCKET HEADPHONE	4822 267 30968
1259	△	POWER SWITCH	4822 276 11567
1261		SOCKET DC	4822 264 30175
1262	¥△	VOLTAGE SELECTOR	4822 272 10269
1302	ϕ△	FUSE T5A	4822 253 10065
1302	Θ△	FUSE T6.3A	4822 252 51123
1304	Θ△	FUSE T1.25A	4822 253 30334
1305	ϕ△	FUSE T1.25A	4822 071 51252
1400		LCD DISPLAY	4822 130 90954
1401		SWITCH KEY	4822 276 12465
1402		SWITCH KEY	4822 276 12465
1403		SWITCH KEY	4822 276 12465
1404		SWITCH KEY	4822 276 12465
1405		SWITCH KEY	4822 276 12465
1406		SWITCH KEY	4822 276 12465
1407		SWITCH KEY	4822 276 12465
1408		SWITCH KEY	4822 276 12465
1409		SWITCH KEY	4822 276 12465
1410		SWITCH KEY	4822 276 12465
1411		SWITCH KEY	4822 276 12465
1412		SWITCH KEY	4822 276 12465
1415		LAMP 12V 150mA	4822 134 40965
1554		SOCKET ASSY	4822 267 40877
1801		SWITCH PUSH 2P2T	4822 276 12639
1802		SWITCH PUSH 2P2T	4822 276 12639
5109		CERAM FILTER	4822 242 73546
5110		X'TAL 7.2MHZ	4822 303 50034
5401		RESONATOR 4.5MHZ	4822 242 73577
5603		FILTER	4822 242 73768
5604		FILTER	4822 242 73768
	*	AK251/20W	4822 445 10273
	#	AK271/20	4822 445 10276
	@	AK271/20	4822 445 10274
	♠	AK251/20	4822 445 10275
	ϕ	REMOTE CONTROL	4822 218 10323
	Θ	REMOTE CONTROL	4822 218 10326

CAPACITORS

2102		CHIP 100pF 5%	5322 122 32531
2103		CHIP 470pF	4822 122 31727
2105		TRIM 3-11pF	4822 125 60101
2107		CHIP 470pF	5322 122 32268
2108		CHIP 470pF	4822 122 31727
2109		CHIP 6.8pF	5322 122 32269
2110		CHIP 470pF	4822 122 31727
2112		CHIP 150pF	4822 122 31808
2113		CHIP 1nF	5322 122 34123
2114		CHIP 220nF	4822 122 32927
2115		CHIP 220nF	4822 122 32927
2116		CHIP 22nF	4822 122 31797
2120		CHIP 100nF	4822 122 33496
2129		CHIP 470pF	5322 122 34099
2131		CHIP 1nF	5322 122 34123
2132		CHIP 22nF	5322 122 32654
2133		CHIP 470pF	4822 122 31727
2134		CHIP 220nF	4822 122 32927
2135		TRIM 5.2-30pF	4822 125 60102
2138		CHIP 220nF	4822 122 32927
2139		TRIM 5.2-30pF	4822 125 60102
2140	α	PP 510pF 400V	4822 121 51263
2140	£	PP 560pF 400V	4822 121 51381
2141		CHIP 22nF	5322 122 32654
2147		CHIP 4.7nF	4822 122 33339
2148		CHIP 4.7nF	4822 122 33339
2150		CHIP 22nF	5322 122 32654
2153		CHIP 18pF	5322 122 32965
2154		CHIP 15pF	5322 122 32481
2155		CHIP 820pF	4822 122 33806
2156		CHIP 22nF	5322 122 32654
2158		CHIP 470pF	4822 122 31727
2159		CHIP 470pF	5322 122 32268
2160		CHIP 470pF	5322 122 32268
2161		CHIP 220nF	4822 122 32927
2164		CHIP 5.6pF	5322 122 32967
2165		CHIP 220nF	4822 122 32927
2168		CHIP 3.3nF	4822 122 33891
2169		CHIP 22nF	5322 122 32654
2310	△	ELCAP 25V 47μF	4822 124 40433
2311	△	ELCAP 25V 100μF	4822 124 41525
2714		PS 63V 5.6nF	4822 121 50543

RESISTORS

3100		CHIP 22Ω	4822 051 20229
3102	α	CHIP 560Ω	4822 051 20561
3102	£	CHIP 330Ω	4822 051 20331
3103		CHIP 5.6kΩ	4822 051 20562
3107		CHIP 330Ω	4822 051 20331
3109		CHIP 4.7kΩ	4822 051 20472
3110		CHIP 2.2kΩ	4822 051 20222
3113		CHIP 270Ω	4822 051 20271
3114		CHIP 10kΩ	4822 051 20103
3115		TRIMMER 22kΩ	4822 100 11213
3116		CHIP 100Ω	4822 051 20101
3118		CHIP 10kΩ	4822 051 20103
3119		CHIP 10kΩ	4822 051 20103
3120		CHIP 1MΩ	4822 051 20135
3121		CHIP 1kΩ	4822 051 10102
3122		CHIP 1MΩ	4822 051 20135
3123		CHIP 1kΩ	4822 051 10102
3129		CHIP 100kΩ	4822 051 20104
3131		CHIP 0Ω	4822 051 20008
3136		CHIP 4.7kΩ	4822 051 20472
3137		CHIP 4.7kΩ	4822 051 20472
3139		CHIP 100kΩ	4822 051 20104
3140		RST 330Ω 1/8W	4822 050 23301
3144		CHIP 1kΩ	4822 051 10102
3146	△	PR01 150Ω	4822 053 10151
3148		CHIP 5.6kΩ	4822 051 20562
3149		CHIP 470kΩ	4822 051 20474
3151		CHIP 22kΩ	4822 051 20223
3154		CHIP 33kΩ	4822 051 20333
3155		CHIP 22kΩ	4822 051 20223
3156		CHIP 5.6kΩ	4822 051 20562
3158		CHIP 330Ω	4822 051 20331
3159		CHIP 470Ω	4822 051 20471
3160		CHIP 27kΩ	4822 051 20273
3161		CHIP 0Ω	4822 051 20008
3163		CHIP 680Ω	4822 051 20681
3300	△	1/8W 150Ω	4822 050 21501
3301	△	1/8W 150Ω	4822 050 21501
3317	△	NFR25 47Ω	4822 116 80335
3318	△	NFR25 47Ω	4822 116 80335
3321	△	WWRST 5W 10Ω	4822 113 80504
3322	△	NFR25 3.9Ω	4822 052 10398
3323	△	NFR25 3.9Ω	4822 052 10398
3324	△	NFR25 3.9Ω	4822 052 10398
3325	△	NFR25 3.9Ω	4822 052 10398
3331	Θ△	VR37 10MΩ	4822 053 21106
3332	Θ△	VR37 10MΩ	4822 053 21106
3338	△	1/8W 10kΩ	4822 050 21003
3339	△	1/8W 10kΩ	4822 050 21003
3340	△	1/8W 22kΩ	4822 050 22203
3401	△	NFR25 47Ω	4822 052 10479
3404	△	NFR25 12Ω	4822 052 10129
3500		POTM 20K X 2	4822 102 10414
3505		POTM 50KB X 2	4822 101 21102
3507		POTM 50KB X 2	4822 101 21102
3509		POTM 50KB X 2	4822 101 21102
3511		POTM 50KB X 2	4822 101 21102
3513		POTM 50KB X 2	4822 101 21102
3545		POTM 20KB	4822 101 21103
3568	△	NFR25 22Ω	4822 052 10229
3593	△	NFR25 22Ω	4822 052 10229
3606	△	NFR25 22Ω	4822 052 10229
3711	△	NFR25 4.7Ω	4822 116 80311
3715		TRIMMER 100kΩ	4822 100 11163
3716		TRIMMER 100kΩ	4822 100 11163
3774		TRIMMER 10kΩ	4822 100 20166
3776		TRIMMER 10kΩ	4822 100 20166

COILS

5001	δ△	TRANSFOR MAINS	4822 146 30963
5001	¥△	TRANSFOR MAINS	4822 146 30965
5102		FM RF COIL	4822 156 30947
5103		FM RF COIL	4822 156 30947
5104		COIL 0.22μH	4822 157 53192
5105		AM IF COIL	4822 156 20816
5106		AM IF COIL	4822 158 60511
5107		FERROCEPTOR	4822 158 60602
5108		AM OSC COIL	4822 157 51844
5131	Θ	BALUN COIL	4822 157 60365
5601		COIL 36mH	4822 156 20811
5602		COIL 36mH	4822 156 20811
5605		COIL 36mH	4822 156 20811
5606		COIL 36mH	4822 156 20811
5701		OSC COIL 100kHZ	4822 156 20946

SEMICONDUCTORS

6001		TLR220 RD	4822 130 82027
6101		IN4148	4822 130 30621
6102		BB809	5322 130 31684
6103		BB809	5322 130 31684
6104		IN4148	4822 130 30621
6105		1SV149	4822 130 81673
6106		1SV149	4822 130 81673
6107		BZX79-B4V7	4822 130 34174
6131		1N4148	4822 130 30621
6132	Θ	1N4148	4822 130 30621
6133	♠	1N4148	4822 130 30621
6300	△	KBU6DL-7002	4822 130 82289
6305	△	BZX79-C13	4822 130 34195
6306		1N4148	4822 130 30621
6307		1N4148	4822 130 30621
6312		1N4148	4822 130 30621
6313		1N4148	4822 130 30621
6314		BZX79-C6V8	4822 130 34278
6315		BZX79-C2V7	5322 130 34563
6316		1N4148	4822 130 30621
6317		1N4148	4822 130 30621
6401		BZX79C5V6	4822 130 34173
6410	Θ	1N4148	4822 130 30621
6411		1N4148	4822 130 30621
6412		1N4148	4822 130 30621
6413		1N4148	4822 130 30621
6415		1N4148	4822 130 30621
6420		RCR GP1U520X	4822 130 81254
6436		BZX79C5V6	4822 130 34173
6437		TLR124 RD	4822 130 31274
6438		BZX79C12V	4822 130 34197
6551		1N4148	4822 130 30621
6552		1N4148	4822 130 30621
6553		1N4148	4822 130 30621
6554		1N4148	4822 130 30621
6555		1N4148	4822 130 30621
6556		1N4148	4822 130 30621
6557		1N4148	4822 130 30621
6558		1N4148	4822 130 30621
6559		1N4148	4822 130 30621
6560		1N4148	4822 130 30621
6561		1N4148	4822 130 30621
6562		1N4148	4822 130 30621
6563		1N4148	4822 130 30621
6564		1N4148	4822 130 30621
6565		1N4148	4822 130 30621
6566		1N4148	4822 130 30621
6567		1N4148	4822 130 30621
6703		1N4148	4822 130 30621
6704		1N4148	4822 130 30621
6705		1N4148	4822 130 30621
6706		1N4148	4822 130 30621
6707		1N4148	4822 130 30621
6708		1N4148	4822 130 30621
6710		1N4148	4822 130 30621
6711		1N4148	4822 130 30621
6712		1N4148	4822 130 30621
6713		1N4148	4822 130 30621
6714		1N4148	4822 130 30621
6731		BZX79-C2V4	4822 130 31253
6732		BAV21	4822 130 30842

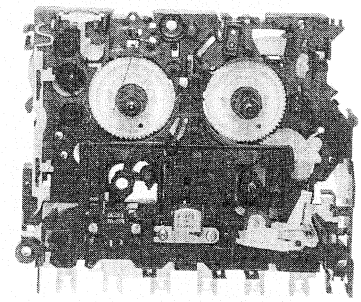
SEMICONDUCTORS			
6801	TLG124A G-N	4822 130 32472	
6802	TLG124A G-N	4822 130 32472	
7101	2SC1047	4822 130 60163	
7102	2SC1047	4822 130 60163	
7103	BC548C	4822 130 44196	
7104	BC548C	4822 130 44196	
7105	BC558C	5322 130 60068	
7106	2SC1047	4822 130 60163	
7107	2SC1047	4822 130 60163	
7114	BC548C	4822 130 44196	
7115	BC548C	4822 130 44196	
7116	LM7000	4822 209 71331	
7117	CXA1238M	4822 209 73851	
7118	2SC1047	4822 130 60163	
7119	BC848B	5322 130 41982	
7120	BC848B	5322 130 41982	
7301	△ BD675	5322 130 44786	
7303	BC338-40	5322 130 44779	
7304	BC338-40	5322 130 44779	
7305	BC548C	4822 130 44196	
7307	△ AN7161N	4822 209 73356	
7308	△ AN7161N	4822 209 73356	
7309	△ BD433	4822 130 42054	
7313	BC548	4822 130 40938	
7314	BC548	4822 130 40938	
7400	TMP47C221-902-B	4822 209 62996	
7401	BC338-40	5322 130 44779	
7403	NMC9313BN	4822 209 60502	
7411	TBC548	4822 130 40938	
7413	TBC548	4822 130 40938	
7420	TBC558	4822 130 40941	
7421	TBC548	4822 130 40938	
7435	TBC548	4822 130 40938	
7436	TBC548	4822 130 40938	
7437	BC338-40	5322 130 44779	
7438	BC328-40	4822 130 41715	
7439	TBC548	4822 130 40938	
7440	BC338-40	5322 130 44779	
7441	BC328-40	4822 130 41715	
7442	TBC548	4822 130 40938	
7443	TBC558B	4822 130 44197	
7444	TBC548	4822 130 40938	
7445	TBC548	4822 130 40938	
7446	TBC558	4822 130 40941	
7447	BC328-40	4822 130 41715	
7501	NJM4560D	4822 209 83274	
7503	TBC548B	4822 130 40937	
7504	TBC548B	4822 130 40937	
7551	NJM4560D	4822 209 83274	
7551	CXA1102P	4822 209 63558	
7552	BC548B	4822 130 40937	
7552	NJM4560D	4822 209 83274	
7553	TBC548C	4822 130 44196	
7554	TBC548C	4822 130 44196	
7554	BC338-40	5322 130 44779	
7555	BC338-40	5322 130 44779	
7556	NJM4560D	4822 209 83274	
7563	BC558C	5322 130 60068	
7564	BC548C	4822 130 44196	
7565	BC548C	4822 130 44196	
7701	TDA1602A/N3	4822 209 62372	
7704	BC548B	4822 130 40937	
7705	BC548B	4822 130 40937	
7707	BC558B	4822 130 44197	
7722	BC548C	4822 130 44196	
7724	BC338-40	5322 130 44779	
7801	TBC558C	5322 130 60068	

♠ For -/21 only
@ For -/37 only
# For -/57 only
* For -/90 only
¥ For -/13/21 only
Θ For -/37/57 only
α For -/13/70/90 only
δ Not for -/13/21 only
φ Not for -/37/57 only
£ Not for -/13/70/90 only

"After servicing and before returning set to customer perform a leakage current or resistive measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5 mA".

Tape transport RN4

Service
Service
Service



45 190 A11

For details and exploded view see Service Manual of tape transport RN/RR, RDN/RDR (general documentation)

Service Manual

(GB) MAINTENANCE

It is recommended to clean the recorder after approx. 500 hours of operation.

To be cleaned with alcohol or spirit

- Erase head
- Recording/playback head
- Capstan
- Pressure roller

(F) ENTRETIEN

L'appareil devra être nettoyé après env. 500 heures de marche aux points les plus importants.

Nettoyer les éléments suivants à l'alcool ou à l'alcool à brûler:

- Tête effacement
- Tête enregistrement/reproduction
- Cabestan
- Galet presseur

(NL) ONDERHOUD

Aanbevolen wordt het apparaat na ca. 500 bedrijfsuren schoon te maken

Schoonmaken met alcohol of spiritus:

- Wiskop
- Opneem-/weergeefkop
- Toonas
- Drukrol

(D) WARTUNG

Es empfiehlt sich, das Gerät nach ca. 500 Betriebsstunden zu reinigen

Reinigen mit Alkohol oder Spiritus:

- Löschkopf
- Aufnahme/Wiedergabe-Kopf
- Tonachse
- Andruckrolle

(I) MANUTENZIONE

E consigliabile pulire l'apparecchio dopo circa 500 ore di funzionamento ai punti principali.

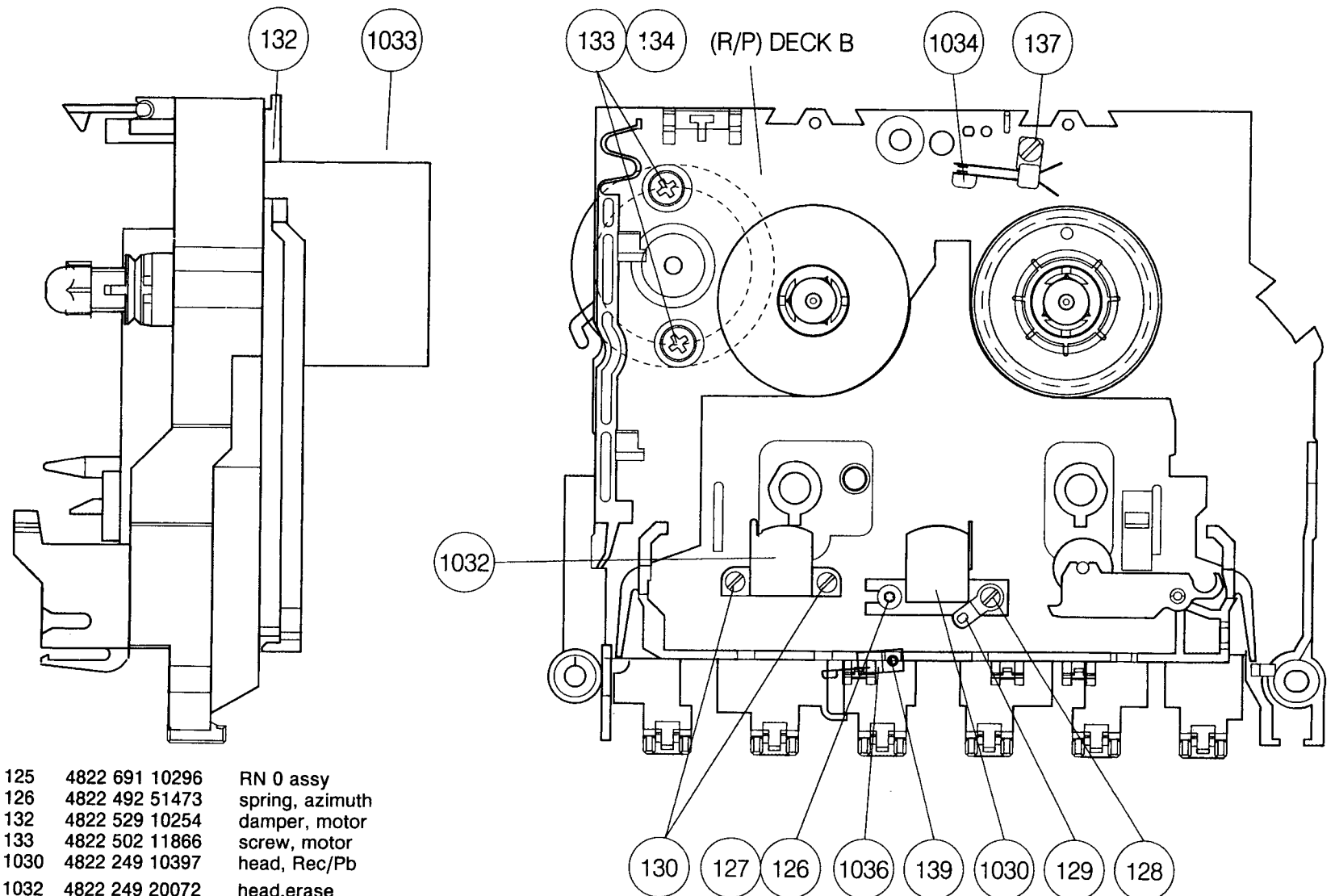
Pulire con alcool

- Testina di cancellazione
- Testina di registrazione/riproduzione
- Capstan
- Rullo preminastro

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

Subject to modification
4822 725 23055

STRIPPED VERSION WITHOUT NOTED ITEMS IS CALLED AND HANDLED AS RN0 4822 691 10296



MDA.2554
T28/008

125	4822 691 10296	RN 0 assy
126	4822 492 51473	spring, azimuth
132	4822 529 10254	damper, motor
133	4822 502 11866	screw, motor
1030	4822 249 10397	head, Rec/Pb
1032	4822 249 20072	head,erase
1033	4822 361 21323	motor
1034	4822 271 30598	switch, indication play
1036	4822 278 90624	switch, record

Only those parts of which a service code number is stated are serviceparts

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